

MEDICARE
PROSPECTIVE PAYMENT
AND THE AMERICAN
HEALTH CARE SYSTEM

REPORT
TO THE CONGRESS

JUNE 1990

REPORTS

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PROSPECTIVE PAYMENT
ASSESSMENT COMMISSION

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REPORT
TO THE CONGRESS

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Stuart H. Altman, Ph.D.
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Donald A. Young, M.D.
Executive Director

June 1, 1990

The Honorable Dan Quayle
President of the Senate
United States Senate
Washington, D.C. 20510

Dear Mr. President:

I am hereby transmitting to the Congress the report *Medicare Prospective Payment and the American Health Care System*. This report has been prepared by the Prospective Payment Assessment Commission as requested by the Committee on Appropriations of the House of Representatives [H. Rept. 911, 98th Cong., 2d sess., 140 (1984)].

Sincerely,

A handwritten signature in black ink, appearing to read "Stuart H. Altman", with a long horizontal flourish extending to the right.

Stuart H. Altman, Ph.D.
Chairman

Enclosure

PROSPECTIVE PAYMENT ASSESSMENT COMMISSION
300 7th Street, S.W. Washington, D.C. 20024 (202) 453-3986

Stuart H. Altman, Ph.D.
Chairman

Donald A. Young, M.D.
Executive Director

June 1, 1990

The Honorable Thomas Foley
Speaker
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

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Chairman

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Executive Summary

Executive Summary

Health care expenditures in the United States reached nearly \$540 billion in 1988—an increase of 10.4 percent over 1987 levels. The unabated growth in health spending throughout the past decade, along with other developments, has caused dramatic changes in the delivery and financing of health care. Among the changes in delivery are technological advances, increases in the types and number of services provided in all settings, and the movement of services to outpatient sites. Financing changes are largely a response to the continuous rise in health care expenditures but have also been influenced by changes in delivery.

This report on Medicare and its effects on American health care presents the results of the Prospective Payment Assessment Commission's (ProPAC) ongoing study of these complex and interrelated issues. ProPAC focuses on how Medicare's prospective payment system (PPS) has affected hospital inpatient care, but discusses other topics as well.

The report first gives an overview of the health care system today and how it has evolved during the past 10 years. Before presenting detailed information and analyses, the Commission describes general problems related to health care delivery and financing. This overview provides the context for the information in later chapters.

The escalation in health care costs affects all Americans. As public and private third-party payers attempt to constrain costs, more of the burden of paying for health care is shifting to insured persons. In addition, third-party payers—government and private—are increasingly reluctant to subsidize the care of the uninsured. As a result, providers are shouldering more of the financial burden of furnishing such services. These developments have stimulated a growing debate about the responsibility for financing health care.

The escalation in costs results from increases in both the demand for and supply of services, and from inflationary payment policies. Because

Americans receive services from a variety of providers, and because there are many payers, slowing the rate of growth in costs by constraining demand or supply is difficult. Moreover, while insurance-based coverage spreads the risk of financial loss over many people, it may tend to insulate users from the direct costs of health services.

Numerous strategies have been developed in an attempt to contain costs. These strategies, which vary greatly in the extent to which they attempt to influence patient and physician behavior, include patient copayments, limits on provider choice, utilization review requirements, and per-case payments. No single strategy, however, has been shown to reduce overall system costs.

Even though expenditures continue to increase rapidly, the health care system is not meeting many health needs in this country. The Commission is concerned about access to care in rural areas, the financing and provision of care for the uninsured and the underinsured, and the lack of financing for long-term care. Each of these unmet needs poses a special problem for the health care system. The ability to provide services to those with limited or no access to care and to cover services like long-term care are two potential goals of the American health care system. Achieving these goals while containing costs will be difficult, however. Decisions must be made about whom to cover, what level of services to finance, and who should pay. These and other broad issues are discussed further in Chapter 1.

Hospital payments, expenses, and financial condition are discussed in Chapter 2. Except for the first year of PPS, hospitals have experienced large increases in operating costs per discharge. Payments per discharge increased rapidly in the first two years of PPS, slowed during subsequent years, and recently accelerated again. Over the first seven years of PPS, cumulative payments per hospitalized case (or discharge) increased almost twice as rapidly as the market basket measure of inflation.

Costs per case increased even faster than payments. ProPAC estimates that, as a result, PPS operating margins fell below zero in 1989 and projects further reductions in 1990.

The distribution of PPS margins varies widely, both across and within hospital groups. In part, this distribution results from the variability in PPS payments. Payments vary because hospitals differ not only in the volume and types of cases they treat, but also in the kinds of services they provide and how they provide them. Although PPS recognizes many factors that can cause differences in costs across hospitals and adjusts payments for these factors, the system has increased the variability in hospital payment. Moreover, since PPS does not guarantee that payments will match hospital costs, it has led to more variation in hospital financial condition. Under PPS, certain hospital groups, including teaching and other large urban hospitals, appear to have performed much better than others. Small rural hospitals have not fared nearly as well.

A hospital's financial condition and its responses to its environment are determined not only by Medicare inpatient payment but by payments for all its services to all its patients. In the early 1980s, overall hospital revenues grew faster than expenses, especially in the first year of PPS. Consequently, total hospital margins were higher in the early years of PPS than ever before. Total margins then fell somewhat—but not as steeply as PPS margins. During the past two years, total margins have stopped decreasing and have risen slightly.

Due to declining financial condition, some hospitals are closing. Hospitals that closed in 1988 appear to share certain characteristics. Their financial performance was poor both under PPS and in general. As would be expected, they exhibited poor financial performance for several years relative to similar hospitals that remained open. Hospitals that closed also tended to be small and to have experienced a sharp decrease in admissions and occupancy rates in the years preceding closure.

Information on hospital inpatient care and the expansion of outpatient services is presented in Chapter 3. Throughout the 1980s hospital admissions have been declining for persons under 65 years of age; for those over 65, admissions also

declined from 1984 to 1986, when they began to increase slightly. While admissions have fallen, the number and types of patient care services provided outside the hospital have grown. These include ambulatory surgery, home health care, and laboratory services provided in physicians' offices. Although many of these services actually substitute for inpatient care, others supplement this care.

By paying predetermined national rates for similar types of cases, PPS has provided incentives to decrease both inpatient length of stay and the use of inpatient ancillary services. Partially in response to this payment incentive, along with new technological capabilities and increased efforts at utilization review, hospitals have shifted many services related to an inpatient admission to the outpatient setting. The care of many other patients has been shifted completely out of the hospital. Moreover, as the types and number of outpatient providers have increased, the health care marketplace has become more competitive. Consequently, many hospitals have added to or changed the mix of services they offer to retain market share.

There is no evidence of a systematic decline in either access to or quality of care since the implementation of PPS. Nevertheless, changes in service site and potential effects of Medicare's payment system for inpatient care have prompted concern. The Commission therefore is continuing its efforts to assess whether, in fact, problems have developed. Because multiple admissions may in some cases indicate quality of care problems, ProPAC examined patterns of readmissions and transfers. The most recent data show readmissions declining—a reversal from earlier trends. The transfer rate, however, grew about 9 percent per year between 1984 and 1988, perhaps reflecting more appropriate use of specialized care. Because this phenomenon is not well understood, it warrants further investigation.

Chapter 4 describes the Medicare population and discusses health insurance coverage in an era of cost containment, focusing on expenditures by Medicare beneficiaries. While overall expenditures continue to increase, their distribution by service and by payer has changed. Spending for outpatient services, for instance, is growing faster than that for inpatient services. Changing spending patterns

influence beneficiary out-of-pocket costs because of differences in cost sharing requirements. Despite the continuing increase in the dollar amount paid by Medicare beneficiaries, the proportion paid by beneficiaries has not changed substantially.

A majority of Medicare beneficiaries have supplemental insurance to protect against some out-of-pocket costs for health care services. Nevertheless, since most supplemental policies provide only for gaps in Medicare-covered services, significant numbers of the elderly remain vulnerable to other costs of care. Further, a beneficiary with supplemental health insurance can still incur catastrophic costs because certain services, such as long-term care and prescription drugs, are not covered under most policies.

The Medicare Catastrophic Coverage Act of 1988 (MCCA) exemplifies the dilemma posed by two public policy issues: potential limits on access to care and controls over rising costs. MCCA was designed to fill gaps in Medicare coverage. The Act did not, however, include coverage for most long-term care services. Strong opposition from many beneficiaries over the financing mechanism led to repeal of the legislation. In the final analysis, MCCA illustrated the enormous challenges the

American health care system must overcome to improve coverage and financing of needed care at an acceptable cost.

In summary, decisionmakers face many difficult issues relating to the American health care system. Expenditures for health care continue to increase at ever-accelerating rates. Yet many of society's health needs are not being met. All public and private third-party payers desire to constrain the rate of growth in their own expenditures and have responded in a variety of ways. Their efforts, however, have failed to mitigate increases in overall costs. In addition, many people are concerned about quality of and access to care. Finally, millions of Americans remain uninsured for acute care services, and there is little private coverage of the costs associated with long-term care.

These issues have no simple solution; the Commission and others recognize some difficult choices must be made. The nation's health care system requires further reform that involves everyone: providers and consumers, public and private payers alike. These reforms should create consistent incentives and use compatible methods. Furthermore, the reforms should focus on controlling the rate of growth in overall health care costs.

Chapter 1

Issues Facing the American Health Care System

Issues Facing the American Health Care System

The American health care system has undergone dramatic changes throughout the past decade, including important new developments in technology, major shifts of services from inpatient to outpatient settings, and an expanded capacity to provide ambulatory services. The combination of expanded capacity and increased demand for care has led to continuous growth in overall health care expenditures. Changes in the financing of health care have also occurred, largely in response to the rise in spending.

Government and private payers have responded to increased health care expenditures by attempting to contain their costs. Cost containment strategies include limits on coverage and payment, and greater patient cost sharing. Despite higher levels of spending, however, America's health care system still fails to meet many needs. Among these are financing of care for the uninsured and gaps in coverage, especially for services other than acute care. Although the availability of services has increased, wide disparities in access to care remain. These developments raise questions about what is now being purchased with health care dollars compared with what the nation desires to purchase. More health care expenditures for prevention or early intervention, for example, may buy the nation more health care per dollar than the current expenditure distribution.

In this report the Prospective Payment Assessment Commission (ProPAC) describes many of the changes in the American health care system. The Commission also identifies and comments on some major problems that continue to confront the Medicare program and, in particular, its inpatient payment system. This chapter discusses trends in health care spending and some reasons for the continued growth in costs. Responses to increasing costs, including various cost containment strate-

gies, are then presented. Finally, today's health care environment and some of the major problems are reviewed.

This chapter is intended to provide a framework and to raise some important questions relating to the information provided in the rest of the report. Chapter 2 contains information on the financial condition of hospitals, including revenues, expenses, and margins. Availability of services, changing patterns of service use, and access to and quality of care are described in Chapter 3. Characteristics of Medicare beneficiaries, health insurance coverage, and cost containment efforts are discussed in Chapter 4.

TRENDS IN INCREASING HEALTH CARE COSTS

The continuous escalation in spending for health care affects most Americans. Business may respond to increased health costs by decreasing real wages or other benefits for workers, increasing product prices, producing a lower quality product, or decreasing spending for research and development. For government, more dollars devoted to health care in the form of direct outlays and tax subsidies may result in less spending for other needed services such as education or housing. Individuals, therefore, may receive lower real wages or other benefits, pay higher prices for products, or have to forego other services.

National Expenditures

After slowing somewhat in the mid-1980s, annual increases in expenditures for health care in the United States are rising despite continued cost containment efforts by all payers. Between 1980 and 1988, expenditures for health care more than doubled, increasing from \$249.1 billion to \$539.9

billion. Spending grew by 10.4 percent between 1987 and 1988. This compares with the average 10.1 percent annual rate of increase between 1980 and 1988.

The greatest share of dollars spent on health care goes to hospitals. However, from 1980 to 1987, the hospital share decreased from 41.0 percent to 38.9 percent. As a share of total health spending, the portion spent on drugs and medical sundries also decreased, as did the amount for construction. There were, however, large increases in the proportion of health care dollars spent for physician and other professional services such as ambulatory care and home health care. Program administration and the net cost of private health insurance accounted for the largest proportionate growth, rising from 3.7 percent in 1980 to 5.2 percent in 1987. Program administration includes the cost of running government programs; the net cost of private health insurance is the difference between the premiums paid to private insurers and their liability for claims.

Medicare Spending

Because the Medicare program is the nation's largest single payer for health care, the services it covers—and the associated payments—have a major influence on the level of national health expenditures. Moreover, other payers often follow Medicare's lead in service coverage and payment methods.

Total Medicare expenditures, including Part A (hospital inpatient, skilled nursing facility (SNF), home health care, and hospice care) and Part B (physician services, medical supplies, and hospital outpatient care), increased 11.4 percent in 1989 to \$99.9 billion. This was the largest annual increase since 1983. In 1989, payments for inpatient hospital services had the lowest growth rate, 7.1 percent, of all Medicare-covered services. Nevertheless, this was the highest rate of growth for inpatient hospital payments since 1984, the year PPS went into effect.

Part A expenditures for home health services, SNFs, hospice care, and end-stage renal disease (ESRD) services rose by 75 percent during 1989. This increase was due largely to the implementation of catastrophic insurance benefits during the

year. With the repeal of the Medicare Catastrophic Coverage Act of 1988 (MCCA), expenditures for these services should decline markedly in 1990. The rate of increase for Part B expenditures for hospital outpatient care and physician and other services slowed somewhat in 1989.

The distribution of Medicare spending changed significantly between 1980 and 1989 (see Table 1-1). In 1980, 66.5 percent of Medicare expenditures were for Part A inpatient hospital care. By 1989, this had declined to 53.9 percent. Other Part A services totaled 3.3 percent of expenditures in 1980, rising to 7.0 percent in 1989. Outpatient hospital (Part B) services accounted for 5.5 percent of expenditures in 1980 and 7.9 percent in 1989. Other Part B services, such as physician and non-hospital outpatient care, represented the second largest share of Medicare payments in both 1980 and 1989, 24.7 percent and 31.1 percent, respectively.

Public Versus Private Shares of Total Expenditures

The level of spending has risen for all groups of payers, but the distribution of expenses across the public and private sectors has changed. The Office of National Cost Estimates of the Health Care Financing Administration (HCFA) traditionally divides expenditure data between private and public programs. Public programs include those of Federal, state, and local governments. Recent refinements in data provided by this office allocate private sector payments between businesses and households. Federal taxes paid by these groups for

Table 1-1. Proportion of Medicare Expenditures, by Type of Service (In Percent)

Type of Service	1980	1989
Inpatient hospital (Part A)	66.5%	53.9%
Other Part A services ^a	3.3	7.0
Outpatient hospital (Part B)	5.5	7.9
Other Part B services ^b	24.7	31.1

Note: Numbers may not add to 100 due to rounding.

^a Includes home health services, skilled nursing, hospice care, and ESRD.

^b Includes physician, suppliers, independent laboratory, home health services, and group prepayment policies.

SOURCE: Health Care Financing Administration, Office of the Actuary.

Medicare are subtracted from the government accounts and counted as payments by these sectors.¹

This method of measurement indicates that private businesses paid 28.8 percent of total health care expenditures in 1980; households paid 38.4 percent; the Federal government paid 17.7 percent; and state and local governments, 14.4 percent (see Table 1-2). By 1987, the share of health care costs paid by private businesses had declined to 27.9 percent, while the share paid by households increased to 41.5 percent. The proportion of expenditures incurred by the Federal government (other than those supported by Medicare taxes) decreased to 16.2 percent. The state and local government share declined to 13.7 percent.

U.S. Health Spending Compared with Other Countries

Health spending in the United States is higher and continues to increase at a faster rate than in other major industrialized countries.² As a percentage of the United States' gross domestic product (GDP), health care expenditures increased from 10.9 percent in 1986 to 11.2 percent in 1987. By contrast, the United Kingdom spent 6.1 percent while Canada and France spent 8.6 percent in 1987. Per capita health expenditures in the U.S., which increased between 1986 and 1987 from \$1,926 to \$2,051, are more than twice the average for Japan, Italy, and the United Kingdom (see Figure 1-1).

The U.S. government plays a much smaller role in financing and providing health care compared with the governments of other industrialized nations. The percentage of the population eligible for government-sponsored health insurance is far smaller in the United States than in most European nations.³ There are, for example, 16 European countries in which 90 percent or more of the population is eligible for public health insurance to cover hospital or ambulatory care.

Even with greater expenditures, it does not appear that U.S. citizens are healthier than those of other countries, at least as measured by some important health indicators. According to the U.S. Public Health Service report, *Health United States and Prevention Profile*, the Japanese live 4.2 years longer than Americans, and the U.S. ranks 22nd

Table 1-2. Distribution of Expenditures for Health Services, by Type of Payer (In Percent)

Type of Payer	1980	1987
Total	100.0%	100.0%
Private	67.9	70.1
Private business	28.8	27.9
Household (individual)	38.4	41.5
Philanthropy	0.7	0.7
Public	32.1	29.9
Federal government*	17.7	16.2
State and local government	14.4	13.7

* This method allocates Medicare taxes paid by households and businesses back to these sources.

SOURCE: Katharine R. Levit, Mark S. Freeland, and Daniel R. Waldo, "Health Spending and Ability to Pay: Business, Individuals, and Government," *Health Care Financing Review* 10(3):1-11, Spring 1989.

among 39 countries in infant mortality. These facts make many people question whether the United States is receiving all the value it could for the dollars being spent on health services.

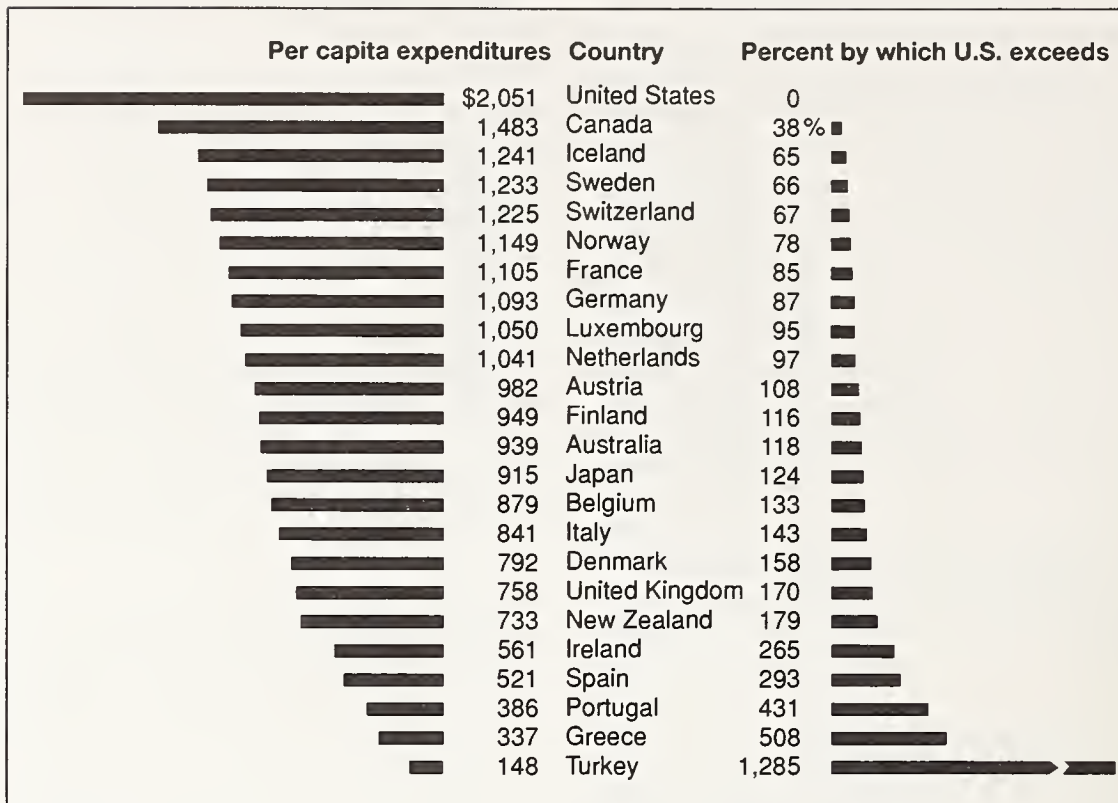
REASONS FOR CONTINUED INCREASES IN COSTS

Researchers and policy analysts have identified many reasons for increased health expenditures. Among these are the nature of health insurance in the United States, the pluralistic system of financing and payment, increases in supply and demand, and market pressures on providers.

Most Americans do not pay directly for the total costs of their health care services because these costs are paid through various third-party programs. Government-sponsored programs cover part of the costs of care for the elderly, for some of the very poor, and for other groups such as veterans and military personnel. Employer-based private insurance covers a portion of the costs of care for many workers and their families.

Although insurance is essential to spread the risk of potential financial ruin caused by catastrophic illness, it insulates providers and consumers from the direct costs of services. As insurance removes individual limits on spending by providers or patients, the rationing function normally played by the market is substantially weakened. Physician and patient decisions about service use, therefore,

Figure 1-1. Per Capita Health Expenditures in the United States and Other Countries, 1987



SOURCE: G. J. Schieber and J. P. Poullier, "International Health Care Expenditure Trends, 1987," *Health Affairs*, 8(3):172, Fall 1989.

are often made with little regard to their relative value and cost.

The American public places a high value on its pluralistic health care delivery and financing system. The large number of payers and the numerous methods used to pay many different types of providers, however, contribute to increased health expenditures. This is due in part to the administrative costs of submitting, reviewing, and paying claims for services. In addition, the reliance on multiple providers and payers has impeded the development of a comprehensive approach for controlling total health care costs.

The aging of the population is another factor that will continue to affect health care costs substantially. The proportion of the population 65 years and over, for example, is projected to rise from 9.8 percent in 1970 to 13.0 percent by the year 2000. Although progress has been made in the control of certain conditions such as heart

disease and stroke, a growing elderly population will expand the demands for health care. The elderly are increasingly likely to receive additional diagnostic and therapeutic services as medical indications and capabilities broaden.

Demand for health services has grown for other reasons as well. The dramatic increase in the incidence of certain diseases such as AIDS has created additional demands for resources. In addition, individuals are becoming more sophisticated in their knowledge about medicine and more receptive to the services offered by physicians and other providers. Certain treatments like cataract extraction or arthroscopy, for example, are now available in outpatient settings. Individuals who previously were reluctant to seek care on an inpatient basis may be more likely to use such ambulatory services. Consequently, even though per-service cost may decrease when care moves from the inpatient to the outpatient setting, total use and spending may increase because more services are being provided.

As new technologies and treatments become available, demand for services also rises. Third-party payers subsequently respond by covering the new services. As a result, demand is further stimulated. This chain of events repeats itself as new technologies and treatments diffuse, improving opportunities for better patient outcomes.

While new technologies may enhance quality of care, they may also increase costs. This is true in cases where they represent breakthroughs in treatment, such as heart transplantation and cancer therapy. Some technologies supplement rather than substitute for other services. For example, magnetic resonance imaging (MRI), now performed in addition to other imaging procedures, may raise overall costs. By contrast, other technologies, such as new drugs for the treatment of ulcers and the substitution of some outpatient surgery and home health services for inpatient care, have reduced overall costs of care.

Expanded supply is yet another cause for rising health care costs. Patients not only are receiving more expensive services, but also are being referred more often for additional services. Technological developments have added to the service capacity, especially in outpatient settings. The increased availability of ambulatory services could improve access and reduce costs. It may also raise important questions regarding appropriateness of care and appropriateness of site of care.

Finally, providers face several other pressures that often drive up costs. As payers attempt to constrain payments and markets become more competitive, providers attempt to maintain or increase market share. This could lead to overall system cost increases if, for example, providers compete on the basis of having the most up-to-date services. Cost containment activities also may raise providers' administrative costs. In addition, the costs of medical liability insurance have grown rapidly for many physicians and providers.

The multiple objectives of providers may limit their efforts to constrain costs. Most providers balance a variety of equally important goals, such as maximizing revenue or income, furnishing a complete range of services, providing high-quality care, offering state of the art care, and training medical residents. Competing objectives may lead

an institution to provide services that are inefficient from a systemwide perspective but that meet institution-specific goals.

Fundamental to cost control is the ability of the physician to influence the use of services. Acting as an agent for the patient, the physician plays a powerful role in selecting the volume and mix of health services. Therefore, limiting the growth of expenditures for health care ultimately depends on influencing physician treatment decisions.

Exacerbating the cost containment situation is the uncertainty surrounding the appropriateness, effectiveness, and outcomes of many treatments. Given this lack of certainty and the pressures of medical practice liability, services tend to be provided even if they are of marginal or unproven value. Such medical ambiguity has high attendant costs, as it is difficult to assess the relative value and cost of procedures and to perform meaningful utilization review without the ability to judge necessity and appropriateness.

RESPONSES TO INCREASING COSTS: A DECADE OF COST CONTAINMENT

Throughout the 1980s, payers pursued many strategies to limit the growth rate in expenditures for their beneficiaries. These strategies have relied primarily on the initiative of individual private payers and Federal and state governments acting in their role as administrators of health plans for the aged and the poor. Although a systemwide planning strategy was attempted, it was ended in the late 1970s.

Some major differences can be seen between the strategies used by government and those employed by private corporations and insurance companies. Government, using its leverage as a major payer, has generally attempted to control the payment rate for services while trying to ensure access and give beneficiaries freedom to choose providers. Private payers have relied on strategies that focused largely on restricting patient choices by limiting the types of insurance plans available, contracting with selected providers, or restricting coverage of services to certain settings. While each approach has demonstrated some success, overall expenditures continue to rise at rates far in excess of the growth in national income.

The cost containment strategies adopted have become more comprehensive as payers have sought more effective ways to restrain the mix and volume of services and encourage the use of less costly types of care. These strategies involve the bundling of services and the use of broader payment units. Per-case payment systems such as Medicare's prospective payment system (PPS) bundle all services supplied during an inpatient stay and provide a single payment. Similar systems have been adopted by some Medicaid and Blue Cross plans. This type of payment scheme is intended to create financial incentives for hospitals to provide services in a more efficient manner, including reducing length of stay and the volume of services.

These types of systems do not provide all the answers to cost containment, however. One response to their incentives has been to shift services out of the hospital. Although this may have lowered the cost of inpatient care, it has not had a corresponding effect on the total cost of care. In addition, PPS incentives for hospitals to control costs do not apply to physicians. Hospitals have incentives to reduce inpatient length of stay and use of services. Physicians, alternatively, have financial incentives to increase the use of services. They must also grapple with malpractice risks. Since hospitals prosper by attracting physicians and their patients, they have been reluctant to pressure medical staffs to limit services. And finally, because PPS does not provide incentives to control admissions, Medicare must use Peer Review Organizations (PROs) to carry out third-party review of the necessity and appropriateness of admissions and the care furnished during a hospital stay.

Recently, the Federal government has attempted to gain more control over physician expenditures by restructuring its payment system away from high-technology and procedure-oriented services. It has adopted a resource-based relative value scale (RBRVS) for pricing physician services. Unlike PPS, the RBRVS does not bundle groups of services or directly control the volume of services that can be billed to Medicare. To overcome this shortcoming, overall spending limits will be established each year; if expenditures exceed these limits, physician fee rates will be adjusted downward in subsequent years. This approach to physician payment will not result in consistent financial incentives

for physicians and hospitals because the physician's payment will remain independent of the hospital's costs incurred in treating the patient.

The strategies used by health maintenance organizations (HMOs) and preferred provider organizations (PPOs), which are responsible for providing all of a patient's acute care, represent the most comprehensive approach to cost containment. These organizations are paid a preset periodic rate and so have strong financial incentives to control the volume, mix, and unit cost of services used by their enrollees. They also have incentives to promote prevention, early diagnosis, and early treatment of illness. When care is needed, they are likely to substitute less costly ambulatory care for expensive inpatient care if it is medically appropriate. In addition, the enrollee is usually required to obtain services from a single provider or a limited set of participating providers. Sometimes, however, HMOs and PPOs may be able to achieve cost reductions not because of greater efficiency but because their enrollees are healthier.

HMOs and similar organizations have proliferated rapidly in most large urban areas over the last decade (see Chapter 4). The growth of HMOs was originally encouraged by direct Federal support. More recently, the Federal government has tried to take advantage of the availability of such organizations by encouraging enrollment of Medicare beneficiaries. In recent years, however, the number of prepaid health plans participating in the Medicare program has decreased. Nevertheless, total enrollment of Medicare beneficiaries in prepaid health plans increased almost 5 percent in 1989 to 1.4 million. The growth of these organizations also has been fostered by the attempts of many large employers to reduce their costs for employee health insurance. In 1989, almost 14 percent of the total population, or about 35 million people, were enrolled in prepaid health plans.

THE HEALTH CARE ENVIRONMENT TODAY

The mechanisms implemented to contain costs have thus far had variable success. Nevertheless, there have been some effects on beneficiaries, hospital financial condition, and service availability and delivery. Further, many unmet needs remain,

such as health care for the uninsured and long-term care coverage, which cannot be addressed without a greater investment of resources or a redistribution of the resources currently available.

Hospital Financial Condition

The degree to which hospitals are financially successful or unsuccessful in the current environment varies greatly. Intensified cost containment efforts by the government and other third-party payers may especially affect hospitals already in financial difficulty.

A common measure of financial condition is the hospital margin. Both total margins and PPS margins are important. Total margins (total revenues less total expenses as a percentage of total revenue) increased to 7.6 percent in the first year of PPS. They declined to 3.8 percent in the fifth year of PPS (PPS 5)—a level roughly equal to total margins during the late 1970s. PPS margins (PPS payments relative to costs covered by PPS) have declined dramatically from over 14 percent in the first two years of PPS to 2.6 percent in PPS 5.

Hospitals with teaching or disproportionate share status tend to be more financially successful under PPS but less financially successful overall. By comparison, small rural hospitals do poorly under PPS on average, but their overall margins are similar to urban hospitals (see Chapter 2). The Commission is interested in understanding the factors responsible for these differences in hospital financial performance.

Some hospitals that do poorly are closing, whereas others that do poorly manage to stay in business. While it is appropriate for some hospitals to close, hospital closures also raise concerns about access to care. This is particularly true for rural hospitals, which represent slightly more than half of hospital closures. People in rural areas may live quite far from the nearest available hospital, whereas those in urban areas are likely to have access to other nearby hospitals. Nevertheless, the use of inpatient beds in rural hospitals has declined much more rapidly than in urban hospitals. This is a result of such factors as shifting demographics and possibly a greater willingness of rural beneficiaries to seek care in urban areas or at rural referral hospitals.

Service Availability and Delivery

The types of services and the settings in which they are provided continue to change. There are trade-offs between availability of services and the effective and efficient provision of these services. Analyses by ProPAC and others have shown that for certain specialized procedures, costs are lower and outcomes better as the volume of the procedures performed by a provider increases. These kinds of studies raise questions about the appropriateness and desirability of providing services in many settings at lower volumes rather than in fewer settings with higher volumes.

Although efforts are under way to improve hospital quality control mechanisms that emphasize outcomes, quality control methods in other settings are less developed. Coordinating care across settings is difficult. Furthermore, as the types and numbers of providers multiply, ensuring that care is of high quality becomes more complicated.

Effects on Insured Individuals

Rising health care costs and expenditures affect individuals in many ways, including increasing out-of-pocket costs for care. Most individuals with health insurance coverage, whether through Medicare or another insurance program, have experienced increases in premiums or changes in coverage. The Health Insurance Association of America (HIAA) reported that between 1987 and 1988, insurance premiums increased at rates greater than general inflation and medical care inflation. Although employers paid for the largest share of these increases, the relative portion paid by enrollees rose about 4 percent between 1988 and 1989. Information from the Office of National Cost Estimates reflected similar findings; that is, individuals are paying a larger share of health care expenses.

Unmet Needs

The uninsured have always had difficulty obtaining health care, especially primary and preventive services. For acute services, however, it is generally believed that most hospitals provide needed care regardless of the patient's ability to pay. The current cost containment environment has made it more difficult for hospitals and others to provide services to individuals with limited ability to pay.

Most payers—Medicare included—are willing to pay only for costs associated with their beneficiaries. Recently, Medicare payments have reflected the special problems of teaching and disproportionate share hospitals. Nevertheless, hospitals are not compensated for much of the care furnished to the uninsured.

Uninsured Persons in the United States—Data from the first household survey of the 1987 National Medical Expenditure Survey (NMES) indicated that 37 million persons, or 15.5 percent of the population, were uninsured.⁴ This figure exceeds the estimate of 31.1 million persons uninsured throughout 1987, as identified by the Current Population Survey (CPS). Part of the difference is attributed to treatment of the 4 million persons eligible only for Veterans Administration benefits. NMES counts these persons as uninsured while CPS considers them insured.⁵

Both CPS and NMES data indicate that about 80 percent of the uninsured were employed or were dependents of an employed person. CPS data indicate that nearly 42 percent of the uninsured were in families where the employed person worked full-time for the entire year. Another 24 percent were in families where the employed person worked full-time for a portion of the year. In addition, a majority of the employed uninsured earned less than \$10 an hour. Ten percent of the uninsured had incomes at the poverty line, while 34 percent had incomes above this level but less than 185 percent of the poverty line.

The majority of the employed uninsured worked in small firms; one study reported that 49 percent of all the uninsured worked in firms with fewer than 25 employees.⁶ This is consistent with NMES findings that the chance of being uninsured is greater for employees of smaller firms. The United States has traditionally relied on workplace-based health insurance, rather than on social insurance. The large number of employed uninsured persons indicates that reliance on the workplace is failing to meet many needs. This may be due to the high costs of insurance or higher premiums associated with smaller risk pools.

Access and Uncompensated Care—Several studies have reported that, compared with insured

persons, the uninsured have fewer physician contacts. In addition, the physician contact made by uninsured persons is usually in the hospital emergency room or outpatient department. One study found that the uninsured had shorter stays and underwent fewer procedures than insured inpatients.⁷

The use of services by patients without insurance often results in uncompensated care. This includes charity care, for which no payment is expected, and bad debt, for which payment is expected but not received. Data on uncompensated care costs generally are collected only for hospitals. According to the American Hospital Association (AHA), in 1980 costs for uncompensated care were \$4.1 billion, or 5.3 percent of total health expenses, rising in 1988 to \$10.7 billion, or 6.3 percent of total expenses. Un-sponsored care is defined as uncompensated care less government tax appropriations. In 1980, costs for un-sponsored care totaled \$3.0 billion, rising to \$8.3 billion in 1988.

Long-Term Care—Relatively few individuals have private long-term care insurance coverage. The elderly are the most frequent users of long-term care services, largely because they have a high incidence of chronic illness. In 1987, national spending for long-term care was approximately \$56 billion. Of this, about 75 percent was spent on nursing home care, which is typically paid for by Medicaid and private sources. Medicare pays less than 2 percent of this amount. Private insurance for long-term care is now becoming available, with more than 100 companies offering long-term care policies as of 1988. However, private long-term care insurance paid for less than 1.0 percent of costs associated with nursing home care and about 4.0 percent of the costs of home health care.

CHALLENGES FOR THE FUTURE

The greatest challenge confronting the American health care system is containing expenditure growth while ensuring access to care for everyone. Many of the current problems will have to be overcome if care for the uninsured is to be financed and provided. The key to solving this problem is determining relative responsibility for financing and structuring

payment mechanisms that are perceived as fair by the parties that will most likely have to contribute.

The ability to distinguish between truly beneficial services and those that offer only marginal or even negative value needs to be enhanced. As more services are provided outside the hospital, new questions are raised regarding the appropriateness of the care provided and the sites of care used. The appropriateness and effectiveness research efforts under way represent only the first steps that will be necessary.

Progress in dealing with the problems confronting the American health care system will be slow. Tough choices must be made. Balancing the desires to contain costs, provide services to address unmet needs, and cover long-term care expenses will be difficult. Trade-offs must be sensitive to effects on access to high-quality care. Efforts by individual payers to contain costs do not necessarily lower overall system costs. Reforms in the health care system must, therefore, involve all providers and consumers, as well as private and public payers.

Notes to Chapter 1

1. Katharine R. Levit, Mark S. Freeland, and Daniel R. Waldo, "Health Spending and Ability to Pay: Business, Individuals, and Government," *Health Care Financing Review* 10(3):1-11, Spring 1989.
2. George J. Schieber and Jean-Pierre Pouiller, "International Health Care Expenditure Trends: 1987," *Health Affairs* 8(3):169-77, Fall 1989.
3. Bengt Jönsson, "What Can Americans Learn from Europeans?" *Health Care Financing Review*, 1989 Annual Supplement, 79-93.
4. Data for this section are taken from Pamela Short, Alan Monheit, and Karen Beauregard, *A Profile of Uninsured Americans*, DHHS Pub. No. (PHS) 89-3443, National Medical Expenditure Survey Research Findings 1, National Center for Health Services Research and Health Care Technology Assessment, September 1989; and M. Eugene Moyer, "A Revised Look at the Number of Uninsured Americans," *Health Affairs* 8(2):102-10, Summer 1989.
5. This smaller estimate is consistent with the larger NMES estimate for the first quarter since fewer persons are without coverage for an entire year.
6. Moyer, "A Revised Look at the Number of Uninsured Americans."
7. Joel Weissman and Arnold Epstein, "Case Mix and Resource Utilization by Uninsured Hospital Patients in the Boston Metropolitan Area," *Journal of the American Medical Association* 261(24):3572-76, June 23-30, 1989.

Chapter 2

Hospital Payments, Expenses, and Financial Condition

Hospital Payments, Expenses, and Financial Condition

Although the prominence of the hospital as the central locus of health care is declining, it is still by far the single most important type of provider. Hospital care accounted for nearly 40 percent of all national health care expenditures in 1988.¹

The financial status of hospitals is determined by many factors, including the types of services they provide and how they provide them; the way state and Federal governments, private insurers, and others pay for hospital services; and other aspects of the environment in which hospitals operate. In this chapter, the financial condition of the hospital industry is examined, focusing on the role of prospective payment and including data on hospitals' overall financial status.

The chapter begins with an analysis of hospital payments and costs under Medicare's prospective payment system. First, the distributions of PPS payments across hospital groups and by payment category are described to provide an overview of the system and its components. Then, changes in payment policy and the Medicare case-mix index (CMI) are examined so that the determinants of increases in per-case payments may be better understood. This is followed by discussions of trends in PPS operating costs and payments and the resulting PPS operating margins. Descriptive data on hospitals that have had consistently high or consistently low PPS margins are presented as part of ProPAC's ongoing analysis of factors that determine hospital financial performance under PPS.

The second section contains data on Medicare inpatient hospital margins, which include categories of inpatient costs currently excluded from PPS. Recent changes in the way Medicare pays hospitals for their inpatient capital costs and the

direct costs of graduate medical education programs have increased interest in these margins as an indicator of Medicare payment policy effects.

Indicators of the overall financial status of the hospital industry are presented in the third section. It begins with a discussion of trends in hospital resources, including occupancy rates, employment and productivity of labor resources, and capital expenses and financing. Trends in hospital expenses and revenues are then described, followed by an analysis of total hospital margins, which cover inpatient and outpatient care to both Medicare and other patients as well as non-patient care activities. Other indicators of hospitals' overall financial status are also presented.

The number and effects of hospital closures have been discussed frequently in the context of PPS payment. The fourth section describes hospitals that closed in 1988, including their characteristics and financial status compared with similar hospitals that did not close.

The chapter concludes with a discussion of the implications of this information for evaluating current policy and formulating plans for future research.

HOSPITAL FINANCIAL CONDITION UNDER PPS

The amount and distribution of PPS payments are major policy issues with important consequences for both hospitals and Medicare beneficiaries. Each year, changes in the Medicare program lead to changes in the amount and distribution of payments. These changes, in combination with the trend in operating costs, determine the financial performance of hospitals under PPS.

PPS Payments to Hospitals

In fiscal year 1990, hospitals will receive an estimated \$47.3 billion in PPS payments.² Of that amount, about \$43.2 billion will be paid from the Medicare Hospital Insurance (Part A) Trust Fund. Beneficiaries will contribute the remainder, about

\$4.2 billion, through Medicare cost sharing requirements (inpatient deductibles and copayments).

PPS payments to hospitals are not evenly distributed across hospital groups (see Table 2-1). For example, hospitals in urban areas receive 85 percent of total PPS payments, although they account

Table 2-1. Distribution of PPS Hospitals and Discharges and Estimated Fiscal Year 1990 PPS Payments, by Hospital Group (In Percent)

Hospital Group	PPS Hospitals	PPS Discharges	Total PPS Payments	Indirect Teaching Payments	Disproportionate Share Payments	Outlier Payments
All hospitals	100%	100%	100%	100%	100%	100%
Urban	53	77	85	98	95	94
Rural	47	23	15	2	5	6
Large urban	26	40	47	67	57	58
Other urban	26	38	38	31	37	36
Rural referral	4	7	5	2	2	3
Sole community	5	2	1	*	*	*
Other rural	38	14	9	*	3	3
Major teaching	4	9	15	60	32	25
Other teaching	16	33	37	40	35	41
Non-teaching	80	58	48	0	33	34
Disproportionate share:						
Large urban	10	15	21	43	57	31
Other urban	11	18	19	21	37	20
Rural	7	4	3	1	5	1
Non-disproportionate share	72	63	57	35	0	47
Urban <100 beds	14	6	5	1	2	3
Urban 100-249 beds	19	21	20	8	23	16
Urban 250-404 beds	11	24	26	23	28	28
Urban 405-684 beds	6	19	23	41	28	31
Urban 685+ beds	2	7	10	26	13	16
Rural <50 beds	23	5	3	*	*	*
Rural 50-99 beds	14	6	4	*	1	1
Rural 100-169 beds	7	6	4	*	2	1
Rural 170+ beds	4	6	5	1	3	3
New England	4	6	6	10	3	8
Middle Atlantic	9	14	17	29	23	26
South Atlantic	14	17	15	11	16	16
East North Central	15	18	18	22	12	15
East South Central	9	8	7	3	8	5
West North Central	14	8	8	7	3	5
West South Central	15	11	10	5	11	9
Mountain	7	4	4	3	2	3
Pacific	12	12	15	10	21	12
Voluntary	54	70	73	77	63	75
Proprietary	20	14	13	2	11	10
Urban government	7	8	10	18	22	13
Rural government	16	6	4	*	1	1

Note: PPS payments estimated using PPS rules in effect as of April 1, 1990. Excludes hospitals in Maryland and New Jersey. Columns may not add to 100 due to rounding.

* Less than 0.5 percent.

SOURCE: ProPAC estimates based on ProPAC PPS payment model and fiscal year 1988 MedPAR file data from the Health Care Financing Administration.

for only 77 percent of all PPS discharges and 53 percent of PPS hospitals. Rural hospitals, by contrast, receive only 15 percent of PPS payments, but account for 23 percent of PPS discharges and 47 percent of PPS hospitals.

When urban and rural hospitals are separated into various subgroups, additional patterns emerge. In general, larger hospitals receive a higher proportion of PPS payments. For instance, while nearly one-quarter of all PPS hospitals are rural hospitals with fewer than 50 beds, they receive only 3 percent of total PPS payments. By contrast, urban hospitals with 685 or more beds account for only 2 percent of all PPS hospitals, but 10 percent of total PPS payments.

Variation in PPS payments across hospital groups is a result of differences in discharge volume and payments per discharge. Payments per discharge are determined by several factors. These include the standardized payment amount, which varies by location; the mix of cases treated and the diagnosis-related group (DRG) weights; and adjustments to the basic payment rate. PPS adjustments include indirect teaching and disproportionate share payments, as well as outlier payments. The payment formula is thus intended to reflect appropriate differences in the costs of treating Medicare patients at different types of hospitals.

Indirect Teaching and Disproportionate Share Payments—In fiscal year 1990, indirect teaching and disproportionate share payments combined are expected to account for 8.6 percent of all PPS payments, or about \$4 billion (see Table 2-2).

The indirect teaching adjustment is intended to recognize the indirect effect of teaching programs on hospitals' operating costs. Teaching hospitals are thought to offer a wider range of services and technologies, treat patients who are more severely ill, and generally provide care in a different way than other hospitals.

PPS accounts for the indirect costs of teaching by applying a hospital-specific percentage adjustment to each teaching hospital's payments. The size of the adjustment varies according to the intensity of the hospital's graduate medical education activities (as measured by the ratio of interns

and residents per bed). In fiscal year 1990, indirect teaching payments are expected to total about \$2.5 billion, or 5.3 percent of PPS payments.

The PPS disproportionate share adjustment is intended to compensate hospitals that treat high proportions of low-income patients. Such hospitals are thought to have higher costs than otherwise similar hospitals for a variety of reasons, including their location and the characteristics of the patients they treat. Disproportionate share payments are expected to be \$1.6 billion in fiscal year 1990, or 3.3 percent of PPS payments.³

Almost all indirect teaching and disproportionate share payments go to hospitals located in urban areas. Urban hospitals receive a greater share of their PPS revenue from these payments than other hospital groups. In general, larger hospitals also receive more of their PPS payments from indirect teaching and disproportionate share adjustments than smaller hospitals. For example, urban hospitals with 685 or more beds receive 18.5 percent of their total PPS payments from these adjustments, compared with only 1.8 percent for urban hospitals with fewer than 100 beds.

There is substantial overlap between the hospitals that receive teaching and disproportionate share payments. Teaching hospitals receive more than two-thirds of all disproportionate share payments, and disproportionate share hospitals receive almost two-thirds of all indirect teaching payments. Basic DRG payments account for only 63.6 percent of all PPS payments for major teaching hospitals. By contrast, non-teaching hospitals depend on basic DRG payments for 94.1 percent of their PPS payments.

Disproportionate share and indirect teaching payments are also distributed unevenly across geographic areas. The Middle Atlantic and East North Central regions combined receive more than half of all indirect teaching payments. Disproportionate share payments go predominantly to the Middle Atlantic and Pacific regions (23 percent and 21 percent, respectively).

Outlier Payments—Outlier payments are intended to protect hospitals from the risk of financial losses due to cases with exceptionally long stays or high costs. They are also designed to mitigate the incen-

tive to avoid or inappropriately treat patients who are likely to become exceptionally costly. In fiscal year 1990, payments for outliers are expected to be about \$2.5 billion, or 5.2 percent of all PPS payments.

Outlier payments are funded by a 5.6 percent reduction in the standardized payment amounts (the basic DRG payment rates) for urban hospitals and a 2.2 percent reduction for rural hospitals. These payments are, however, made according to

Table 2-2. Distribution of Estimated Fiscal Year 1990 PPS Payments, by Payment Type and Hospital Group (In Percent)

Hospital Group	Basic DRG Payments	Indirect Teaching Payments	Disproportionate Share Payments	Outlier Payments
All hospitals	86.2%	5.3%	3.3%	5.2%
Urban	84.4	6.2	3.7	5.8
Rural	96.3	0.6	1.1	1.9
Large urban	82.1	7.6	4.0	6.3
Other urban	87.3	4.4	3.3	5.0
Rural referral	94.2	1.7	1.1	3.0
Sole community	99.1	*	0.7	0.2
Other rural	97.2	0.1	1.2	1.5
Major teaching	63.6	21.0	6.9	8.5
Other teaching	85.2	5.8	3.1	5.8
Non-teaching	94.1	0.0	2.3	3.7
Disproportionate share:				
Large urban	72.7	10.8	8.9	7.6
Other urban	81.8	6.0	6.5	5.6
Rural	89.4	1.1	6.8	2.7
Non-disproportionate share	92.5	3.3	0.0	4.2
Urban < 100 beds	95.3	0.7	1.1	2.9
Urban 100-249 beds	90.0	2.1	3.7	4.1
Urban 250-404 beds	86.1	4.8	3.6	5.5
Urban 405-684 beds	79.9	9.2	4.0	6.9
Urban 685+ beds	73.0	14.1	4.4	8.5
Rural < 50 beds	98.8	0.1	0.4	0.7
Rural 50-99 beds	98.1	0.4	0.5	1.0
Rural 100-169 beds	96.5	0.1	1.5	1.9
Rural 170+ beds	93.1	1.6	1.8	3.5
New England	82.7	8.6	1.7	7.0
Middle Atlantic	78.1	9.2	4.6	8.2
South Atlantic	87.2	3.9	3.3	5.5
East North Central	87.3	6.4	2.2	4.1
East South Central	89.3	2.6	4.1	3.9
West North Central	90.5	4.7	1.5	3.3
West South Central	88.6	2.8	3.8	4.8
Mountain	91.7	3.4	1.4	3.5
Pacific	87.4	3.7	4.6	4.4
Voluntary	86.2	5.6	2.9	5.3
Proprietary	92.3	0.8	2.9	4.0
Urban government	75.8	10.1	7.3	6.7
Rural government	96.8	0.4	1.2	1.6

Note: PPS payments estimated using PPS rules in effect as of April 1, 1990. Excludes hospitals in Maryland and New Jersey. Rows may not add to 100 due to rounding.

* Less than 0.05 percent.

SOURCE: ProPAC estimates based on ProPAC PPS payment model and fiscal year 1988 MedPAR file data from the Health Care Financing Administration.

the distribution of outlier days and costs—regardless of whether they occur at urban or rural hospitals. The net effect of the outlier policy on a given hospital's PPS payments depends on whether its proportion of outlier payments is greater than the 5.6 percent (for urban hospitals) or 2.2 percent (for rural hospitals) outlier offset.

Outlier payments are not evenly distributed across hospital groups. Urban hospitals receive 94 percent of all outlier payments and rural hospitals only 6 percent. Similarly, while teaching hospitals account for 42 percent of PPS discharges, they receive 66 percent of outlier payments. More than one-quarter of outlier payments are made to hospitals in the Middle Atlantic region.

As with other elements of PPS payment, the uneven distribution of outlier payments is not necessarily an indication that the outlier policy is inequitable. Certain groups of hospitals treat a more diverse mix of patients, and thus face a greater risk that some of their patients will require an extraordinary amount of resources. It is to be expected that such hospitals would receive the greatest portion of outlier payments.

Moreover, outlier cases are generally extremely costly and outlier payments rarely compensate hospitals fully for those costs. Therefore, a larger share of outlier payments in a given year should not be construed as an indicator of better financial performance under PPS.

Factors Affecting the Distribution of PPS Payments

Medicare payments to hospitals have always been unevenly distributed because of differences in hospital characteristics. Teaching hospitals, for instance, have historically received a larger than average share of payments because they have more discharges and higher costs per case.

PPS, which is based on averages rather than actual costs, has removed the direct connection between the costs of the individual hospital and its Medicare payments. This connection has been replaced with adjustments designed to recognize certain differences that are believed to be beyond hospitals' control, such as the market conditions

they face, the types of services they provide, and the mix of patients they treat.

However, with Medicare payments no longer tied to the individual hospital's own costs, hospitals are more vulnerable to the effects of payment policy decisions. These decisions include both the size of the PPS update factor, which determines the increase in PPS payment rates, and the adjustments incorporated in the system.

Since the implementation of PPS, the distribution of Medicare payments to hospitals has indeed changed. This is attributable both to payment policy decisions and to other factors—such as increases in the CMI—that are not directly affected by policy decisions.

Payment Policy Effects—Some PPS payment policies were part of the original design of the system. Others were promulgated through regulation or legislation as the system developed.

Examples of payment policy changes that have been implemented since PPS began include reductions in the indirect teaching adjustment; the addition of a disproportionate share adjustment; and separate update factors for the rates paid to rural hospitals, hospitals in large urban areas, and other urban hospitals. These changes have generally been intended to mitigate distributional inequities in the original design of PPS.

In addition, some changes in the PPS payment rates have resulted from regulations updating elements of the system using new data. These include changes in the area wage index and the outlier thresholds.

Changes in Fiscal Year 1990—The changes that were implemented in fiscal year 1990 resulted in the largest PPS payment increase in five years (see Table 2-3).⁴ Most of these changes were mandated by the Omnibus Budget Reconciliation Act of 1989 (OBRA 1989).

Effective January 1, 1990, the PPS update factor was increased to 9.72 percent for rural hospitals, 5.62 percent for hospitals in large urban areas, and 4.97 percent for other urban hospitals. The average update factor was 6.0 percent, but combined with a 1.22 percent across-the-board reduction in the DRG

weights, actual payment rates increased by an average of 4.72 percent.

Effective April 1, 1990, the formula for calculating the disproportionate share adjustment was

changed by increasing the size of the adjustment for most disproportionate share hospitals and providing an adjustment for many other hospitals that had not been eligible previously. In addition, sole community hospitals and small rural Medicare-dependent

Table 2-3. Effects of PPS Update Factor and Payment Policy Changes in Per-Case PPS Payment Rate, by Hospital Group (In Percent)

Hospital Group	Fiscal Year						Total	Including Effect of Change in Case Mix*
	1985	1986	1987	1988	1989	1990		
All hospitals	5.4%	1.0%	0.8%	3.4%	2.4%	4.2%	18.3%	42.6%
Urban	5.2	1.0	0.4	2.9	2.4	3.7	16.5	41.7
Rural	6.2	0.9	3.1	6.2	2.8	7.1	29.2	48.1
Large urban	3.9	0.9	-0.6	2.2	2.4	3.9	13.2	37.3
Other urban	6.8	1.2	1.6	3.8	2.3	3.6	20.8	47.4
Rural referral	8.5	1.4	2.8	5.0	1.7	4.5	26.3	50.4
Sole community	4.5	0.4	1.8	4.0	3.5	18.3	36.0	52.4
Other rural	5.2	0.7	3.4	7.3	3.4	7.1	30.2	45.9
Major teaching	5.7	-1.5	0.5	2.4	4.4	4.7	17.1	46.5
Other teaching	5.1	0.7	0.0	2.1	2.4	3.5	14.4	39.2
Non-teaching	5.5	1.8	1.5	4.7	1.9	4.7	21.6	43.9
Disproportionate share:								
Large urban	3.1	1.5	-0.1	3.2	2.7	4.6	15.8	41.0
Other urban	6.8	1.8	2.2	4.7	2.7	3.9	23.9	51.7
Rural	6.3	0.4	3.6	7.7	3.5	10.4	36.1	57.1
Non-disproportionate share	5.6	0.7	0.5	2.9	2.2	4.0	16.8	39.9
Urban < 100 beds	6.5	2.5	1.8	4.1	2.0	3.9	22.6	44.3
Urban 100-249 beds	5.2	2.4	1.2	4.3	1.5	3.5	19.4	42.3
Urban 250-404 beds	5.0	1.3	0.2	2.6	2.2	3.8	15.8	40.6
Urban 405-684 beds	5.0	0.1	-0.2	2.3	2.8	3.8	14.4	41.0
Urban 685+ beds	5.2	-1.6	-0.2	1.6	3.8	3.8	13.0	40.2
Rural < 50 beds	6.3	1.4	3.6	7.2	3.7	8.8	34.9	46.4
Rural 50-99 beds	5.4	0.3	3.5	7.1	3.4	7.8	30.4	45.5
Rural 100-169 beds	4.9	1.4	2.5	5.7	2.5	7.2	26.7	47.6
Rural 170+ beds	8.1	0.8	2.9	5.4	2.2	5.4	27.2	50.5
New England	6.1	0.9	0.6	1.5	2.5	3.9	16.4	39.1
Middle Atlantic	6.2	-0.7	2.1	6.5	0.8	3.7	19.9	44.9
South Atlantic	7.2	0.7	1.8	5.0	2.0	4.8	23.2	50.1
East North Central	5.3	0.4	-0.3	-0.7	2.6	3.0	10.6	31.1
East South Central	5.9	0.7	2.1	7.3	1.9	5.3	25.3	48.4
West North Central	4.6	0.3	0.6	2.4	3.7	4.7	17.3	41.9
West South Central	4.9	0.7	1.1	3.6	3.4	4.7	19.8	47.6
Mountain	5.5	0.4	1.3	4.0	3.5	5.6	21.8	44.0
Pacific	3.5	4.0	-1.0	2.9	3.1	4.6	18.3	42.2
Voluntary	5.2	0.9	0.3	2.5	2.5	3.9	16.2	39.6
Proprietary	5.2	1.2	1.5	6.2	0.8	4.9	21.2	49.3
Urban government	6.9	1.6	2.4	5.1	3.3	4.7	26.4	53.1
Rural government	6.3	0.8	3.7	6.9	3.1	7.3	31.3	48.6

Note: Figures are not estimates of actual changes in fiscal year PPS hospital payments. They are meant to isolate the effects of changes in PPS rules on PPS payment rates, holding all other factors constant. Payments for each year are estimated based on the PPS rules in effect on the last day of the fiscal year. The effect of change in case mix is reflected only in the last column. Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with fiscal year 1987.

* The effect of change in case mix for 1989 and 1990 is estimated from the average annual effect for 1985 through 1988.

SOURCE: ProPAC estimates based on ProPAC PPS payment model and fiscal year 1988 MedPAR file data from the Health Care Financing Administration.

hospitals were allowed to choose between payment rates computed using their own 1982 costs, their 1987 costs, or the PPS Federal rate.⁵

These changes have resulted in large increases in the per-case payment rates for rural hospitals—particularly sole community hospitals and rural disproportionate share hospitals. Small rural hospitals and rural government hospitals also appear to have benefited from the OBRA 1989 changes.

Cumulative Effects of Payment Policy—The PPS update factor and other payment policy decisions since PPS began have increased per-case PPS payment rates by a cumulative 18.3 percent. Rural hospitals have benefited from these decisions substantially more than urban hospitals, with a cumulative increase of 29.2 percent. Small hospitals have benefited more than large hospitals, in urban as well as rural areas. In spite of a substantial decrease in the indirect teaching adjustment, payments to major teaching hospitals have continued to rise, probably because the implementation of the disproportionate share adjustment has increased payments to many of these hospitals.

Despite the intensity of the debate over the PPS update factor and other payment policy decisions, by far the most important influence on the overall level of PPS payments has been the change in the CMI. The estimated combined effect of payment policy and CMI change since the first year of PPS has been a 42.6 percent increase in PPS payments—more than twice as great as the effect of payment policy alone. CMI changes have also affected the distribution of PPS payments, in some cases offsetting the effects of policy decisions. The trend and pattern of CMI changes are described in more detail below.

Case-Mix Index Change—The CMI is the average DRG weight for all cases paid under PPS. Because DRG weights are based on the average cost of patients in the DRG compared with the national average, a hospital group's CMI measures the relative costliness of the types of patients treated by the hospitals in the group.

The CMI may change over time for several reasons. First, the patients that are treated may be more severely ill. Second, the types of services provided by hospitals may be more complex. Third,

developments in medical practice patterns, such as the tendency to shift more patients to the outpatient setting, may lead to fewer admissions for patients requiring less complex treatment. Finally, hospitals may refine their medical record documentation and coding practices.

The CMI has increased each year since the implementation of PPS (see Table 2-4). The case-weighted average CMI for all hospitals was 1.054 in 1981 (pre-PPS) and increased to 1.286 by fiscal year 1988.⁶ From fiscal year 1984 to fiscal year 1988, the CMI increased at an average annual rate of 3.3 percent; the increase from fiscal year 1987 to fiscal year 1988 was 3.5 percent.

The largest single-year increases in the CMI were in the first two years of PPS. These increases coincided with the onset of financial incentives to improve coding completeness and accuracy and with shifts of patients to outpatient settings. Another large CMI increase occurred in fiscal year 1988, when age was eliminated as a DRG classification criterion and two heavily weighted DRGs were created. Both of these changes in the DRG structure provided hospitals with new incentives for more complete coding.

Historically, the CMI for urban hospitals has been higher than for rural hospitals. In addition, the CMI for urban hospitals has been increasing more rapidly. As a result, the difference between the CMIs of the two groups has been widening over time. In fiscal year 1988, the CMIs for urban and rural hospitals were 1.329 and 1.140, respectively.

Larger hospitals have had a higher and more rapidly increasing CMI than smaller hospitals. Similarly, major teaching hospitals have had both a higher and a more rapidly increasing CMI than other teaching hospitals under PPS, and both groups have had higher and faster-growing CMIs than non-teaching hospitals. However, from fiscal year 1987 to fiscal year 1988 the increase in the CMI for non-teaching hospitals was greater than for teaching hospitals.

Since a change in the CMI corresponds to an equal change in payments, all other things being equal, the distribution of payments may be substantially affected by differences in the rate of CMI change. These differences may be caused by

changes in patient resource requirements or coding practices. Information is not available about the relative importance of these factors across hospital groups. ProPAC will continue to investigate this issue as part of its ongoing analysis of case-mix change.

Trends in PPS Costs and Payments

One of the major objectives of PPS payment policy was to encourage hospitals to hold down the

cost of providing services to Medicare patients. The effectiveness of this incentive is reflected in the data on operating costs over the first five years of PPS. These data are then compared to the trend and pattern of PPS payments over the same time period.

Changes in Costs and Payments—In the first year of prospective payment, total Medicare-allowable operating costs at PPS hospitals were almost 5 percent less than they had been in the

Table 2-4. Changes in the Medicare Case-Mix Index Under PPS, by Hospital Group

Hospital Group	Average Case-Mix Index				Average Annual Percent Change		
	1981*	1984	1987	1988	1981*-1984	1984-1988	1987-1988
All hospitals	1.054	1.128	1.243	1.286	2.5%	3.3%	3.5%
Urban	1.078	1.158	1.283	1.329	2.6	3.5	3.6
Rural	0.983	1.035	1.112	1.140	1.9	2.4	2.5
Large urban	1.085	1.162	1.284	1.331	2.5	3.5	3.7
Other urban	1.071	1.154	1.281	1.327	2.8	3.6	3.6
Rural referral	1.040	1.100	1.207	1.244	2.1	3.1	3.1
Sole community	0.983	1.027	1.090	1.113	1.6	2.0	2.1
Other rural	0.960	1.010	1.071	1.095	1.9	2.0	2.2
Major teaching	1.157	1.241	1.404	1.452	2.6	4.0	3.4
Other teaching	1.092	1.184	1.316	1.359	3.0	3.5	3.3
Non-teaching	1.016	1.080	1.174	1.216	2.2	3.0	3.6
Disproportionate share:							
Large urban	1.096	1.166	1.284	1.339	2.3	3.5	4.3
Other urban	1.070	1.158	1.289	1.335	2.9	3.6	3.6
Rural	0.972	1.022	1.089	1.131	1.8	2.6	3.9
Non-disproportionate share	1.044	1.117	1.229	1.268	2.5	3.2	3.2
Urban <100 beds	1.000	1.052	1.146	1.180	1.9	2.9	3.0
Urban 100-249 beds	1.040	1.107	1.206	1.252	2.3	3.1	3.8
Urban 250-404 beds	1.080	1.157	1.278	1.326	2.5	3.5	3.8
Urban 405-684 beds	1.119	1.219	1.365	1.412	3.2	3.7	3.4
Urban 685+ beds	1.140	1.255	1.415	1.460	3.6	3.9	3.2
Rural <50 beds	0.952	0.990	1.036	1.049	1.4	1.5	1.3
Rural 50-99 beds	0.960	1.014	1.076	1.096	2.0	2.0	1.9
Rural 100-169 beds	0.989	1.046	1.131	1.165	2.1	2.7	3.0
Rural 170+ beds	1.033	1.089	1.188	1.226	1.9	3.0	3.2
New England	1.090	1.134	1.250	1.285	1.4	3.2	2.8
Middle Atlantic	1.091	1.118	1.225	1.277	0.9	3.4	4.2
South Atlantic	1.046	1.130	1.247	1.298	2.8	3.5	4.1
East North Central	1.065	1.128	1.235	1.272	2.1	3.0	3.0
East South Central	1.015	1.076	1.172	1.212	2.1	3.0	3.4
West North Central	1.022	1.132	1.259	1.294	3.8	3.4	2.8
West South Central	0.989	1.105	1.242	1.280	4.1	3.7	3.1
Mountain	1.062	1.157	1.270	1.302	3.2	3.0	2.5
Pacific	1.100	1.183	1.298	1.347	2.7	3.3	3.8
Voluntary	1.068	1.146	1.262	1.304	2.6	3.3	3.3
Proprietary	1.010	1.076	1.189	1.246	2.3	3.7	4.8
Urban government	1.075	1.154	1.272	1.321	2.6	3.4	3.9
Rural government	0.964	1.019	1.088	1.112	2.0	2.2	2.2

Note: Case-mix indexes presented in this table are case-weighted averages for each hospital group. They are based on DRG assignments made by the GROUPEX software in use at the time of discharge for each Medicare case. Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with fiscal year 1986.

* Data for 1981 correspond to the calendar year. All other years shown are Federal fiscal years.

SOURCE: ProPAC analysis of MedPAR file data from the Health Care Financing Administration.

Table 2-5. Changes in PPS Operating Costs, Payments, and Discharges, First Five Years of PPS (In Percent)

Year	PPS Operating Costs	PPS Payments	PPS Discharges	PPS Operating Costs Per Discharge	PPS Payments Per Discharge	PPS Market Basket	PPS Update Factor
TEFRA to PPS 1	-4.8%	10.7%	-6.7%	2.1%	18.9%	4.9%	4.7%
PPS 1 to PPS 2	4.1	3.6	-5.7	10.4	10.3	4.0	4.5
PPS 2 to PPS 3	5.8	-0.7	-3.6	9.8	3.4	3.1	0.5
PPS 3 to PPS 4	9.0	2.9	-0.8	9.8	4.6	3.5	1.2
PPS 4 to PPS 5	11.0	6.5	0.9	9.9	5.8	4.8	1.5

Note: Data on costs, payments, and discharges for each PPS year (TEFRA, PPS 1, etc.) correspond to each hospital's cost reporting period beginning in that year. For instance, the TEFRA year includes data from each hospital's cost reporting period beginning during the year in which the Tax Equity and Fiscal Responsibility Act of 1982 was in effect (Federal fiscal year 1983). Data on the market basket and the update factor are from the corresponding Federal fiscal year (1984 for PPS 1, etc.). Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with PPS 3. Data are based on cohorts of hospitals with cost reports available in each of two successive years.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

previous year (see Table 2-5). Since then, however, PPS operating costs have increased at an accelerating rate. In the fifth year, the increase in operating costs was 11.0 percent, which was the largest since PPS was implemented.

Total PPS payments followed a different trend. In the first year of PPS, payments increased by more than 10 percent. In the third year, payments decreased, followed by successively larger increases in the fourth and fifth years.

Medicare discharges at PPS hospitals decreased sharply in the early years of PPS. By the fifth year, however, discharges had begun to increase again, although by only 0.9 percent—less than the annual increase in Medicare enrollment.

Operating costs per discharge at PPS hospitals increased by only 2.1 percent in the first year. Since then, however, costs per discharge have increased by approximately 10 percent in each year. The PPS market basket, the index of the cost of inputs used to produce care for Medicare hospital patients, has increased at a much slower rate—between 3 percent and 5 percent in each year. Cumulative growth in operating costs per discharge under PPS is estimated to be 77 percent by the seventh year, compared with a cumulative increase in the market basket of 36 percent (see Figure 2-1).

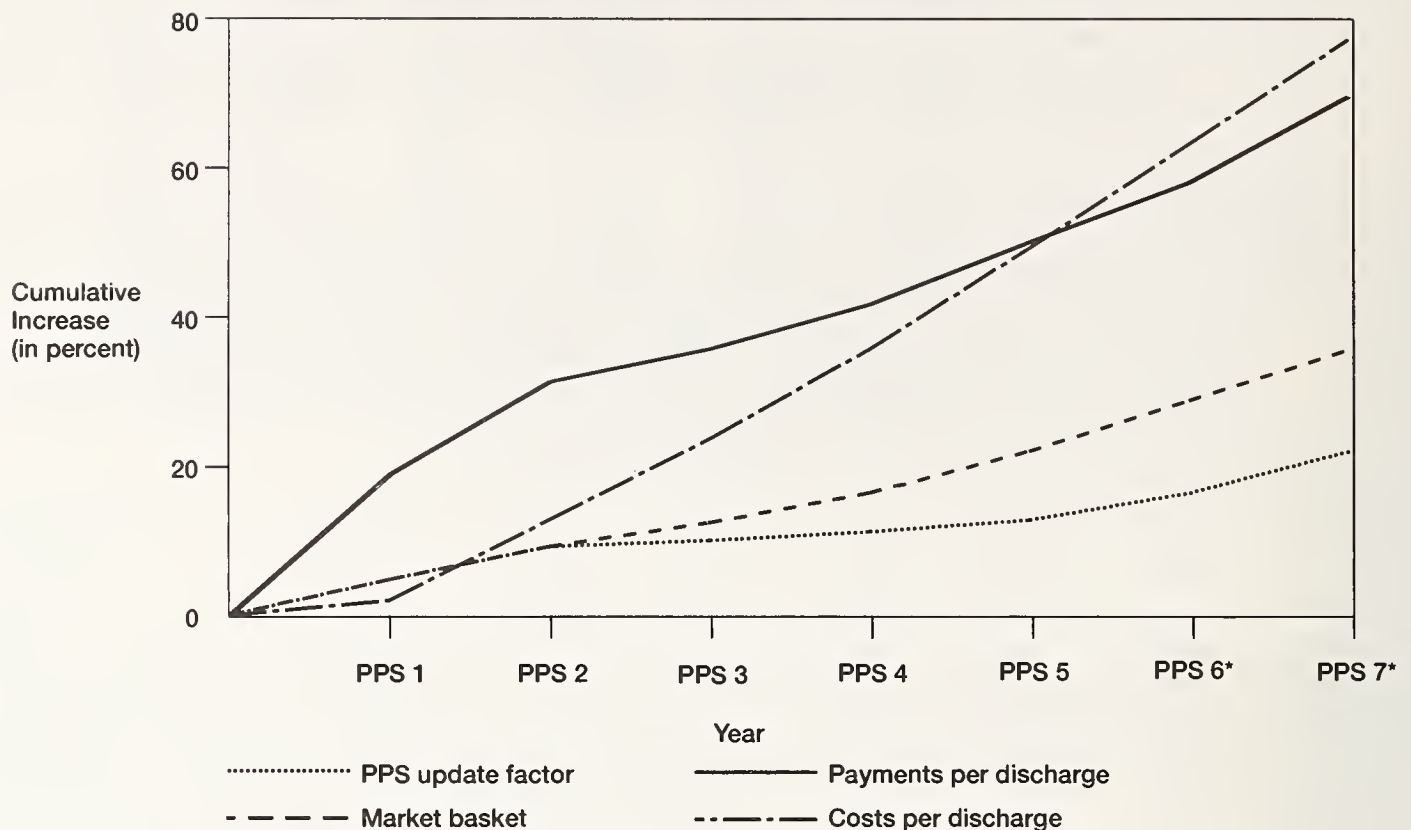
Payments per discharge increased by 18.9 percent in the first year of PPS and 10.3 percent in the

second year. In the third year, they grew by only 3.4 percent, but they have accelerated since. PPS payments per discharge have increased much more rapidly than the update factor in every year. This is primarily due to increases in the CMI, as described above. In the first seven years of prospective payment, the update factor has increased payment rates by a cumulative 22 percent. PPS payments per discharge, however, have increased by an estimated 69 percent.

The Pattern of PPS Costs and Payments—The average annual rate of change in PPS operating costs per discharge for the first five years was 8.4 percent (see Table 2-6). Urban and rural hospitals had about the same average change, but the patterns were quite different. For instance, in the fourth year, the increase in urban hospitals' PPS operating costs was much greater than for rural hospitals (10.0 percent versus 8.3 percent, respectively). In the fifth year, the increase was much greater for rural hospitals than for urban hospitals (11.3 percent versus 9.6 percent, respectively).

Although data on the pattern of increases in operating costs are now available for the first five years of PPS, it is difficult to draw conclusions about the sixth and seventh years or to make projections about the future. The trends for hospital groups are generally erratic, and very few consistent patterns emerge. The pattern of increases in PPS payments per discharge, however, is much clearer (see Table 2-7).

Figure 2-1. Cumulative Increases in PPS Costs and Payments Per Discharge, First Seven Years of PPS



*Costs and payments are estimated for PPS 6 and PPS 7.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration and hospital cost data from the American Hospital Association.

Urban hospitals had a higher average annual increase in PPS payments per discharge than rural hospitals in the first five years of PPS (8.5 percent versus 7.4 percent, respectively). Two separate trends occurred during this period. In the first two years, the increase in payments per discharge was much larger for urban hospitals. After that, rural hospitals had larger increases than urban hospitals. This pattern reflects the payment policy changes discussed above.

The pattern is consistent across different groups of urban and rural hospitals. In each of the first five years, the increase in PPS payments per discharge for hospitals in large urban areas was smaller than for hospitals in other urban areas. Among rural hospitals, rural referral centers had much larger increases in PPS payments per discharge than other rural hospitals, and sole community hospitals had much smaller increases.

Major teaching hospitals had much larger increases than other hospitals in the first two years, but the pattern varied from the third through the fifth years.

PPS Operating Margins

The PPS operating margin compares PPS payments to Medicare-allowable inpatient operating costs. It thus provides a measure of how well hospitals are paid for the costs that prospective payment is intended to cover.

Aggregate PPS Margins—The aggregate PPS operating margin for all hospitals was over 14 percent in each of the first two years of PPS (see Table 2-8).^{7,8} This reflects the large increases in PPS payments per discharge in those years while, at least in the first year, hospitals were generally successful in restraining the increase in operating

costs per discharge. Since the first two years, however, continuing increases in costs, combined with much smaller increases in payments, have resulted in a sharp decline in PPS margins. By the fifth year, the aggregate PPS margin was 2.6 percent.⁹ For the current (seventh) year, ProPAC estimates an aggregate PPS margin of approximately -2.5 percent (see Figure 2-2).

As a group, urban hospitals have had consistently higher PPS margins than rural hospitals. In the first year, the difference between the two groups was 7.4 percentage points (15.8 percent versus 8.4

percent). By the fifth year, this difference had narrowed to 5.9 percentage points (3.6 percent versus -2.3 percent), but the negative PPS margin for rural hospitals was causing increasing concern among health policymakers.

Different groups of rural hospitals had different trends in PPS margins. Sole community hospitals had a lower PPS margin than other rural hospitals in the fifth year (-4.2 percent). Rural referral centers had a substantially higher PPS margin than other rural hospitals, but it was still below zero (-0.1 percent).

Table 2-6. Changes in PPS Operating Costs Per Discharge During the First Five Years of PPS, by Hospital Group (In Percent)

Hospital Group	TEFRA to PPS 1	PPS 1 to PPS 2	PPS 2 to PPS 3	PPS 3 to PPS 4	PPS 4 to PPS 5	Annual Average Percent Change
All hospitals	2.1%	10.4%	9.8%	9.8%	9.9%	8.4%
Urban	2.0	10.3	9.4	10.0	9.6	8.2
Rural	1.6	9.1	10.0	8.3	11.3	8.0
Large urban	0.9	10.0	9.4	9.5	9.2	7.7
Other urban	3.4	10.7	9.7	10.7	10.3	8.9
Rural referral	1.8	9.4	10.1	9.9	11.5	8.5
Sole community	1.1	8.4	7.8	6.5	9.3	6.6
Other rural	1.4	8.7	9.9	7.3	11.2	7.6
Major teaching	0.1	9.7	7.0	9.9	8.6	7.0
Other teaching	1.8	10.3	9.7	9.6	9.4	8.1
Non-teaching	2.3	10.2	10.0	9.9	10.8	8.6
Disproportionate share:						
Large urban	-1.3	10.0	8.6	9.4	9.6	7.2
Other urban	3.6	10.0	10.1	10.9	10.7	9.0
Rural	0.0	8.0	9.8	8.6	12.3	7.7
Non-disproportionate share	2.8	10.6	10.0	9.6	9.8	8.5
Urban <100 beds	1.3	10.4	10.4	10.0	8.3	8.0
Urban 100-249 beds	1.0	9.7	9.7	10.1	10.3	8.1
Urban 250-404 beds	2.0	10.6	8.8	9.5	10.8	8.3
Urban 405-684 beds	3.8	10.0	9.5	10.1	8.6	8.4
Urban 685+ beds	-0.6	11.4	8.1	10.4	8.5	7.5
Rural <50 beds	1.0	9.6	9.5	5.7	12.5	7.6
Rural 50-99 beds	1.7	8.5	9.2	7.1	10.0	7.3
Rural 100-169 beds	1.4	8.5	9.8	8.9	10.8	7.8
Rural 170+ beds	1.7	8.9	10.5	9.9	11.4	8.4
Voluntary	2.4	9.8	9.3	9.5	9.9	8.1
Proprietary	0.7	10.3	11.0	11.9	11.6	9.0
Urban government	1.0	12.1	10.3	9.6	8.9	8.3
Rural government	1.7	11.0	9.8	8.0	10.0	8.0

Note: Data for each PPS year (TEFRA, PPS 1, etc.) correspond to each hospital's cost reporting period beginning in that year. For instance, the TEFRA year includes data from each hospital's cost report beginning during the year in which the Tax Equity and Fiscal Responsibility Act of 1982 was in effect (Federal fiscal year 1983). Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with PPS 3. Data are based on cohorts of hospitals with cost reports available in each of two successive years.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

Among urban hospitals, there is a strong relationship between hospital size and PPS margin. While urban hospitals with fewer than 100 beds had an aggregate PPS margin of -2.2 percent in the fifth year, those with at least 685 beds had a PPS margin of 12.5 percent. Among rural hospitals, there also seems to be a relationship between hospital size and PPS margin, but it is not as consistent as among urban hospitals.

Major teaching hospitals continued to have an extremely high PPS margin in the fifth year (15.1

percent). The difference between the major teaching group and other hospitals has increased in every year of PPS. Other teaching hospitals also had a relatively high PPS margin (3.9 percent) in the fifth year. For the first time, the aggregate PPS margin for non-teaching hospitals was below zero (-1.7 percent).

The Distribution of PPS Margins—As the average PPS margin falls, the distribution of PPS margins becomes increasingly important. In the first year, for instance, when PPS margins were

Table 2-7. Changes in PPS Payments Per Discharge During the First Five Years of PPS, by Hospital Group (In Percent)

Hospital Group	TEFRA to PPS 1	PPS 1 to PPS 2	PPS 2 to PPS 3	PPS 3 to PPS 4	PPS 4 to PPS 5	Annual Average Percent Change
All hospitals	18.9%	10.3%	3.4%	4.6%	5.8%	8.5%
Urban	20.4	10.1	3.1	4.4	5.2	8.5
Rural	11.4	9.4	3.3	4.5	8.7	7.4
Large urban	19.8	8.8	3.1	3.3	4.7	7.8
Other urban	21.3	11.7	3.2	6.0	6.1	9.5
Rural referral	12.2	14.5	4.0	5.6	6.8	8.5
Sole community	8.8	7.7	2.2	2.7	6.7	5.6
Other rural	11.3	6.7	2.6	3.7	9.8	6.8
Major teaching	25.5	13.4	1.7	5.2	5.8	10.0
Other teaching	20.7	10.0	3.1	4.0	5.0	8.4
Non-teaching	16.3	9.3	3.5	4.7	6.6	8.0
Disproportionate share:						
Large urban	18.2	9.0	3.8	4.3	5.7	8.1
Other urban	21.0	11.8	4.1	7.3	6.8	10.0
Rural	12.7	8.4	3.8	5.4	9.6	7.9
Non-disproportionate share	18.9	10.2	3.0	3.7	5.5	8.1
Urban < 100 beds	16.9	9.5	2.9	4.6	3.9	7.4
Urban 100-249 beds	17.5	8.3	3.4	4.9	4.5	7.6
Urban 250-404 beds	19.7	9.7	2.9	4.0	5.9	8.3
Urban 405-684 beds	22.9	11.7	3.0	3.5	6.5	9.3
Urban 685+ beds	27.6	10.8	1.1	6.4	3.8	9.6
Rural < 50 beds	9.6	8.3	2.1	3.6	10.0	6.7
Rural 50-99 beds	11.7	7.1	2.3	3.7	7.0	6.3
Rural 100-169 beds	11.4	8.0	3.4	4.8	10.4	7.6
Rural 170+ beds	12.2	12.8	4.0	5.1	7.0	8.2
Voluntary	19.5	10.0	3.0	4.1	5.6	8.3
Proprietary	17.4	8.9	4.0	5.0	6.9	8.3
Urban government	19.8	12.3	3.9	7.4	4.1	9.3
Rural government	10.5	9.7	2.8	4.5	11.7	7.8

Note: Data for each PPS year (TEFRA, PPS 1, etc.) correspond to each hospital's cost reporting period beginning in that year. For instance, the TEFRA year includes data from each hospital's cost report beginning during the year in which the Tax Equity and Fiscal Responsibility Act of 1982 was in effect (Federal fiscal year 1983). Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with PPS 3. Data are based on cohorts of hospitals with cost reports available in each of two successive years.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

generally high, there was less concern about hospitals with relatively low PPS margins. There were few hospitals for which PPS payments did not cover operating costs. By the fifth year, however, a hospital may have been in serious financial difficulty with a PPS margin only slightly below average.

The reason for this concern is demonstrated by the trend in the distribution of PPS margins (see Table 2-9). In the first year of PPS, only 18.3 percent of the hospitals under prospective payment had negative PPS margins. By the fifth year, 51.2 percent of all PPS hospitals had negative PPS margins, and many had PPS margins substantially

below zero. Moreover, the gap between the hospitals that were doing best under PPS and those that were doing worst had become wider.

The distribution of PPS margins within hospital groups was also very wide (see Table 2-10). While urban hospitals had a substantially higher aggregate PPS margin than rural hospitals in the fifth year, one-quarter of all urban hospitals still had PPS margins less than -9.3 percent. One-quarter of all rural hospitals had PPS margins of 8.5 percent or greater.

The pattern is similar across most hospital groups. Sole community hospitals, for instance,

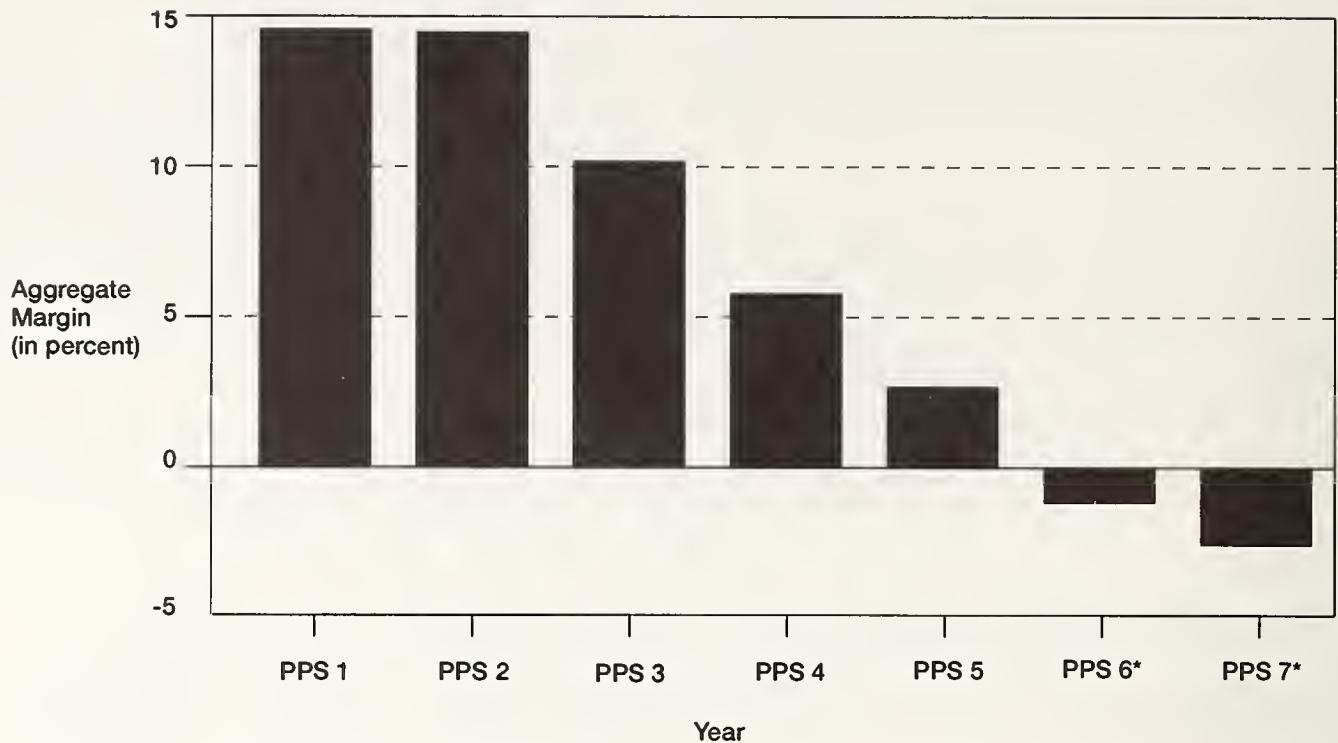
Table 2-8. PPS Operating Margins for the First Five Years of PPS, by Hospital Group

Hospital Group	PPS 1	PPS 2	PPS 3	PPS 4	PPS 5
All hospitals	14.5%	14.4%	10.1%	5.7%	2.6%
Urban	15.8	15.5	11.3	6.8	3.6
Rural	8.4	8.8	3.1	-0.3	-2.3
Large urban	16.2	15.3	11.7	6.7	3.6
Other urban	15.2	15.7	10.6	6.8	3.5
Rural referral	9.5	13.4	8.2	4.3	-0.1
Sole community	6.9	6.2	1.2	-2.7	-4.2
Other rural	8.0	6.5	0.3	-2.8	-3.4
Major teaching	19.0	21.0	18.2	14.9	15.1
Other teaching	16.4	16.1	11.7	7.0	3.9
Non-teaching	12.2	11.5	6.3	1.9	-1.7
Disproportionate share:					
Large urban	17.0	16.1	14.3	10.3	8.8
Other urban	14.9	16.0	11.6	8.7	6.3
Rural	10.4	10.8	5.3	2.4	-0.5
Non-disproportionate share	13.9	13.6	8.3	3.2	-0.2
Urban <100 beds	13.3	12.4	6.3	1.6	-2.2
Urban 100-249 beds	14.5	13.2	8.8	4.3	-0.2
Urban 250-404 beds	15.6	15.0	10.8	6.0	2.1
Urban 405-684 beds	16.1	17.2	12.9	7.5	6.2
Urban 685+ beds	21.0	20.4	17.0	14.6	12.5
Rural <50 beds	6.4	6.0	-0.9	-2.3	-3.5
Rural 50-99 beds	8.4	7.4	1.4	-1.6	-4.0
Rural 100-169 beds	8.8	8.1	3.0	-0.7	-0.5
Rural 170+ beds	9.4	12.4	6.9	2.4	-1.8
Voluntary	15.0	15.1	10.9	6.5	3.3
Proprietary	14.1	12.7	7.6	2.0	-1.6
Urban government	15.1	14.8	9.9	8.6	6.0
Rural government	7.0	6.1	-0.1	-3.6	-1.5

Note: Data for each PPS year (PPS 1, PPS 2, etc.) correspond to each hospital's cost reporting period beginning in that year. For instance, the PPS 1 year includes data from each hospital's cost report beginning during the first year of PPS (Federal fiscal year 1984). Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with PPS 3.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

Figure 2-2. Aggregate PPS Operating Margin, First Seven Years of PPS



*Margin estimated for PPS 6 and PPS 7.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

had a median PPS margin of -6.3 percent in the fifth year, and one-quarter of them had PPS margins less than -22.3 percent. At the same time, another one-quarter had PPS margins of 7.0 percent or greater.

The distribution of PPS margins among major teaching hospitals was consistently high relative to other hospital groups. More than three-quarters of all major teaching hospitals had fifth-year PPS

margins that were higher than the aggregate PPS margin for all hospitals, and one-quarter had PPS margins of 22.5 percent or greater.

Hospitals with Consistently High or Low PPS Margins

After more than six years, there is still much that is not known about what determines financial success or failure under PPS. The data on PPS

Table 2-9. Distribution of PPS Operating Margins and Percentage of Hospitals with Negative Margins, First Five Years of PPS

	PPS 1	PPS 2	PPS 3	PPS 4	PPS 5
10th percentile	-6.7%	-8.4%	-17.2%	-23.1%	-28.3%
25th percentile	3.4	2.2	-3.8	-8.5	-12.2
Median	11.3	10.7	5.7	2.1	-0.5
75th percentile	17.7	18.0	13.6	11.0	9.8
90th percentile	23.2	24.2	20.2	18.7	18.6
Percentage of hospitals with negative PPS operating margins	18.3	20.1	33.5	44.1	51.2

Note: Data for each PPS year (PPS 1, PPS 2, etc.) correspond to each hospital's cost reporting period beginning in that year. For instance, the PPS 1 year includes data from each hospital's cost report beginning during the first year of PPS (Federal fiscal year 1984). Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with PPS 3.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

margins show that even as the performance of PPS hospitals declines in aggregate, some hospitals continue to perform well. As the aggregate PPS margin declines, there is increasing interest in determining why some hospitals do well under PPS and others do not. To the extent that these reasons are beyond the hospital's control, changes in the payment system may be indicated. Insofar as they are related to the hospital's own behavior, it may be possible to use such behavior as a model for other hospitals in similar situations.

The distribution of hospitals by the number of years with negative margins is examined below to indicate groups of hospitals for which chronically low PPS margins are a particular problem. To lay

the groundwork for future analysis, some descriptive statistics are then presented on hospitals with consistently high PPS margins ("winners") and those with consistently low PPS margins ("losers").

Winners and Losers Under PPS—Although PPS is based on averages, the examination of averages for broad categories of hospitals masks much of the information about how individual hospitals perform. Within groups that, as a whole, receive high PPS payments relative to their operating costs, there are significant numbers of hospitals with costs substantially in excess of their payments. Similarly, within groups that have negative aggregate PPS margins, significant numbers of hospitals have payments that are high relative to their costs.

Table 2-10. Distribution of PPS Operating Margins in the Fifth Year of PPS, by Hospital Group (In Percent)

Hospital Group	Percentile				
	10th	25th	Median	75th	90th
All hospitals	-28.3%	-12.2%	-0.5%	9.8%	18.6%
Urban	-22.2	-9.3	1.2	10.7	19.7
Rural	-33.9	-15.5	-2.6	8.5	17.2
Large urban	-25.5	-12.3	-0.3	10.1	19.8
Other urban	-19.1	-7.5	2.4	1.4	19.3
Rural referral	-14.8	-8.1	1.1	8.0	15.5
Sole community	-45.0	-22.3	-6.3	7.0	14.5
Other rural	-35.2	-16.1	-2.6	8.7	18.0
Major teaching	-5.8	3.4	14.5	22.5	33.0
Other teaching	-17.5	-6.6	2.3	10.1	18.8
Non-teaching	-30.5	-14.2	-1.8	8.8	17.7
Disproportionate share:					
Large urban	-21.7	-7.3	4.2	14.9	23.0
Other urban	-15.5	-5.3	4.0	14.1	22.5
Rural	-29.4	-11.6	1.3	12.8	19.3
Non-disproportionate share	-30.2	-14.1	-2.0	8.0	16.6
Urban < 100 beds	-36.3	-14.7	1.7	13.4	24.0
Urban 100-249 beds	-23.8	-11.7	-0.6	9.5	17.4
Urban 250-404 beds	-16.9	-6.8	1.4	9.7	17.5
Urban 405-684 beds	-11.9	-5.1	4.4	13.1	20.0
Urban 685+ beds	-8.2	1.7	9.8	22.1	38.8
Rural < 50 beds	-48.5	-20.8	-2.4	11.4	20.4
Rural 50-99 beds	-28.2	-13.4	-3.2	6.6	14.0
Rural 100-169 beds	-28.2	-13.3	-1.8	6.5	13.3
Rural 170+ beds	-16.8	-9.2	-1.7	5.3	14.8
Voluntary	-23.5	-10.2	0.4	9.8	18.2
Proprietary	-32.9	-16.9	-2.8	9.4	17.9
Urban government	-22.0	-7.2	3.7	14.9	24.3
Rural government	-44.7	-18.0	-3.5	8.4	18.5

Note: Excludes hospitals in Maryland and New Jersey.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

On the other hand, there do appear to be strong patterns in the likelihood of individual hospitals performing well or poorly under PPS. In the first five years of PPS, almost 45 percent of all urban hospitals never had a negative PPS margin, compared with only 25 percent of rural hospitals (see Table 2-11). About one in every nine rural hospitals had negative PPS margins in each of the first five years. By contrast, more than three of every four major teaching hospitals experienced positive PPS margins in each of the first five years.¹⁰

These data indicate that many individual hospitals perform poorly under PPS despite the fact that

similar hospitals perform well and vice versa. In the next year, ProPAC will study the pattern of performance across hospital groups and the performance of individual hospitals within these groups.

Some Evidence on Who Wins and Who Loses Under PPS—To provide information on differences between hospitals that perform well under PPS and those that do not, ProPAC has examined the characteristics of hospitals with PPS margins consistently in the top and bottom quartile, respectively, of the distribution in the third, fourth, and fifth years of PPS.

Table 2-11. Distribution of Hospitals by Number of Years with Negative PPS Operating Margins in the First Five Years of PPS, by Hospital Group

Hospital Group	Number of Years with Negative PPS Operating Margins					
	0	1	2	3	4	5
All hospitals	35.2%	20.7%	17.5%	13.6%	6.8%	6.1%
Urban	44.6	23.1	17.5	10.0	3.2	1.7
Rural	25.1	18.2	17.6	17.5	10.7	10.9
Large urban	41.0	23.6	19.6	11.3	3.0	1.3
Other urban	48.2	22.5	15.3	8.6	3.3	2.1
Rural referral	41.1	25.5	15.6	11.3	3.5	2.8
Sole community	22.8	15.6	18.0	18.6	13.2	12.0
Other rural	23.5	17.7	17.8	18.1	11.1	11.7
Major teaching	76.2	10.9	8.9	3.0	1.0	0.0
Other teaching	48.9	25.0	15.3	6.8	2.8	1.3
Non-teaching	30.6	20.2	18.4	15.5	7.9	7.4
Disproportionate share:						
Large urban	49.7	22.8	13.4	10.7	2.0	1.3
Other urban	55.2	20.6	12.2	7.2	2.7	2.1
Rural	32.8	19.1	16.7	16.2	8.8	6.4
Non-disproportionate share	30.6	20.6	18.9	14.7	7.8	7.3
Urban < 100 beds	39.2	22.6	18.2	9.9	7.0	3.1
Urban 100-249 beds	41.2	22.7	20.7	11.3	2.1	2.0
Urban 250-404 beds	48.5	23.2	14.3	11.0	2.3	0.8
Urban 405-684 beds	51.7	24.9	15.1	6.3	1.5	0.5
Urban 685+ beds	69.6	23.9	6.5	0.0	0.0	0.0
Rural < 50 beds	23.9	15.5	16.8	16.5	11.9	15.5
Rural 50-99 beds	23.5	19.8	19.0	19.2	11.3	7.2
Rural 100-169 beds	27.9	18.8	18.3	17.9	7.5	9.6
Rural 170+ beds	32.8	26.7	15.5	15.5	6.9	2.6
Voluntary	39.4	22.9	17.3	11.7	5.4	3.4
Proprietary	31.1	19.1	20.1	15.0	8.0	6.6
Urban government	47.3	22.4	15.6	7.8	3.4	3.4
Rural government	21.4	14.9	17.0	20.4	11.0	15.4

Note: Excludes hospitals in Maryland, Massachusetts, New Jersey, and New York. Data are based on a cohort of hospitals with cost reports available in all five years. Rows may not add to 100 due to rounding.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

There were slightly more hospitals with consistently high than with consistently low PPS margins. In the three-year database, 11.4 percent of the hospitals were consistent winners and 10.3 percent were consistent losers (see Table 2-12). The former group had an aggregate PPS margin of 18.8 percent, compared with -27.5 percent for the latter group. The PPS winners also did well overall, with an aggregate total margin of 4.7 percent compared with 0.7 percent for the PPS losers.

The relationships between costs and payments for the two groups are striking. Although they had about the same operating costs per discharge, payments per discharge for the PPS winners were more than 50 percent higher than for the losers. These differences are partially explained by the fact that the PPS winners had a much higher mean wage index and mean CMI.

The ratio of capital to operating costs was substantially higher for the PPS losers. There is also a substantial difference in mean occupancy rates, with the PPS losers averaging only 35.2 percent compared with 57.0 percent for the PPS winners.

The distribution of these hospitals by location and other characteristics is markedly different as well. Urban hospitals, for instance, comprised 73.9 percent of the PPS winners group but only 25.6 percent of the PPS losers. Rural referral centers were also more likely to be PPS winners than losers, while sole community hospitals were more likely to be PPS losers.

Teaching hospitals and disproportionate share hospitals were more likely to be PPS winners. Hospital size was also strongly related to consistently high or low PPS margins. Almost 45 percent of all hospitals with consistently low PPS margins were rural hospitals with fewer than 50 beds.

Hospitals with consistently high PPS margins were more likely to be located in the Middle Atlantic and Pacific regions. Hospitals with consistently low PPS margins, on the other hand, were more likely to be located in New England and the South Atlantic and West South Central regions. Urban government hospitals were much more likely

Table 2-12. Characteristics of Hospitals with Consistently High and Consistently Low PPS Margins

	Consistently High	Consistently Low
Number of hospitals	426	383
Percentage of all hospitals	11.4%	10.3%
Characteristics:		
Aggregate total margin (PPS 5)	4.7%	0.7%
Aggregate PPS margin (PPS 5)	18.8%	-27.5%
Aggregate PPS operating costs per discharge	\$4,316	\$4,383
Aggregate PPS payments per discharge	\$5,315	\$3,437
Mean area wage index	0.973	0.860
Mean case-mix index	1.187	1.054
Mean capital to operating costs ratio	0.107	0.140
Mean occupancy rate	57.0%	35.2%
Distribution by hospital group:		
Urban	73.9%	25.6%
Rural referral	3.8	0.8
Sole community	2.8	10.2
Teaching	38.0	6.0
Disproportionate share	45.8	13.1
Urban < 100 beds	19.2	11.2
Urban 100-249 beds	21.6	9.4
Urban 250-404 beds	17.4	3.7
Urban 405-684 beds	11.0	1.3
Urban 685+ beds	4.7	0.0
Rural < 50 beds	15.3	44.6
Rural 50-99 beds	5.4	19.1
Rural 100-169 beds	3.3	8.4
Rural 170+ beds	2.1	2.3
New England	2.6	7.0
Middle Atlantic	18.1	3.9
South Atlantic	8.2	16.7
East North Central	15.3	11.7
East South Central	9.9	5.7
West North Central	16.2	18.0
West South Central	11.5	21.4
Mountain	6.8	9.4
Pacific	11.5	6.0
Voluntary	63.6	44.4
Proprietary	16.2	18.8
Urban government	11.5	4.2
Rural government	8.5	31.9

Note: Excludes hospitals in Maryland and New Jersey. Data are based on a cohort of hospitals with Medicare Cost Reports in each year from PPS 3 through PPS 5. Hospitals with consistently high PPS margins are those in the top quartile of the distribution in each of the three years. Hospitals with consistently low PPS margins are those in the bottom quartile in each of the three years.

SOURCE: ProPAC analysis of Medicare Cost Report and other hospital-level data from the Health Care Financing Administration.

to be PPS winners, while rural government hospitals were more likely to have consistently low PPS margins.

Medicare-Dependent Hospitals—In OBRA 1989, Congress asked ProPAC to conduct a study of hospitals with a high proportion of Medicare patients.

The study consisted of three separate but interrelated analyses. The first analysis was an examination of measures of Medicare dependence. No obvious threshold for defining hospitals as Medicare-dependent was indicated by the data. The analysis showed that PPS margins appear to be related to Medicare share of inpatient days, with high Medicare shares being associated with low PPS margins in both urban and rural areas. In rural areas, however, low Medicare shares were also associated with low PPS margins.

The second analysis described the characteristics of hospitals grouped according to their Medicare shares of inpatient days, with separate thresholds for urban and rural hospitals.¹¹ The high Medicare groups in both urban and rural areas had lower aggregate PPS and total margins. Although their operating costs per discharge were somewhat below those for other hospitals, their PPS payments were much lower. This was due at least in part to the fact that they were much less likely to have received indirect teaching or disproportionate share payments, and they also had lower average CMIs. The rural high Medicare group also had a lower average area wage index. Hospitals with high Medicare shares were much more likely to be small hospitals. They also had lower occupancy rates and substantially longer average lengths of stay than other hospitals.

These data indicate that, although the high Medicare groups do not perform as well under PPS, the use of Medicare share to classify hospitals may mask a great deal of difference in other characteristics. These characteristics may explain at least some of the observed differences in hospital performance.

To test this hypothesis, ProPAC conducted a multivariate analysis of hospital performance under PPS. In this analysis, indicators of location and hospital size were generally found to contribute

significantly to differences in hospital performance. The most powerful factors in the analysis, however, were occupancy rate and average length of stay (LOS). All else being equal, hospitals that had higher occupancy rates performed better under PPS and those that had longer average LOS performed worse. When other characteristics are accounted for, hospitals with high Medicare shares were not found to perform more poorly than other hospitals under PPS.

These findings indicate that hospitals with high Medicare shares have lower PPS margins because they are more likely to have characteristics that lead to poor performance under PPS. The importance of this difference is underscored by the fact that, even within the high Medicare groups, there is a substantial number of hospitals with high PPS margins. Furthermore, these hospitals have much lower costs and higher occupancy rates than other hospitals with high Medicare shares. A more detailed description of this analysis and the Commission's recommendations on this issue will appear in a separate ProPAC technical report.

MEDICARE INPATIENT HOSPITAL MARGINS

The Medicare inpatient margin provides a broader measure than the PPS margin of how well hospitals are compensated for the inpatient hospital services they provide to Medicare patients. This measure compares total Medicare inpatient payments to total Medicare-allowable inpatient costs—including capital, direct medical education, and other inpatient costs currently excluded from PPS.

The Medicare inpatient margin differs from the PPS margin in that it includes several additional cost categories. Since these categories were originally paid on a cost reimbursement basis, including them in the calculation of margins conveyed essentially the same information as that conveyed by the PPS margins. There was no reason to analyze both the PPS margin and the Medicare inpatient margin.

Recent changes in Medicare payment policy, however, have altered the relationship between PPS margins and Medicare inpatient margins. Neither capital costs nor direct medical education costs are paid on a full cost reimbursement basis. Medicare

inpatient margins thus will no longer convey essentially the same information as PPS margins. Including these categories in the analysis of hospital margins could lead to different conclusions about the overall effect of Medicare payment policy.

Pass-Through Payments

Capital and direct medical education expenses and organ acquisition costs are currently paid for by Medicare through mechanisms other than PPS. These types of costs are often referred to as pass-through costs because, at least when PPS was first implemented, they were paid on a cost reimbursement basis—or passed through to Medicare.

Beginning during fiscal year 1987, however, Medicare has reimbursed only a specified portion of Medicare-allowable capital costs. By fiscal year 1989, capital payments equaled only 85 percent of each hospital's Medicare capital costs.

Medicare's policy on payments for the direct cost of graduate medical education has also changed. The Consolidated Omnibus Budget Reconciliation Act of 1985 required that each hospital's direct medical education costs be paid according to annually updated per-resident amounts. HCFA implemented this change in a regulation released in September 1989, effective retroactively for cost reporting periods beginning in July 1985 and later. HCFA estimated that this change would result in a \$930 million reduction in payments for the period from fiscal year 1985 through fiscal year 1991.

These changes mean that the PPS margin may overstate the net Medicare revenue of hospitals—especially those for which a high proportion of Medicare payments are accounted for by capital or direct medical education. The pattern of capital payments across hospital groups, though, is very different from the pattern of direct medical education payments (see Table 2-13).

According to the Medicare Cost Reports for the fifth year of PPS, capital payments accounted for 10.1 percent of all Medicare inpatient hospital payments. The percentage was slightly higher for rural than for urban hospitals. Within the urban group, hospital size appears to be inversely related to the share of Medicare payments accounted for by capital. Teaching status is also inversely related

to the capital payment percentage. These data run counter to the frequent assumption that larger hospitals with presumably more complex services are more dependent on capital payments. This issue is discussed in more detail in the examination of capital costs below.

Overall, direct medical education payments accounted for 2.9 percent of all Medicare inpatient hospital payments in the fifth year of PPS. The

Table 2-13. Medicare Pass-Through Payments as a Percentage of Total Medicare Inpatient Hospital Payments in the Fifth Year of PPS, by Hospital Group

Hospital Group	Capital Payments	Direct Medical Education Payments	Combined Total
All hospitals	10.1%	2.9%	13.0%
Urban	10.0	3.3	13.2
Rural	11.0	0.4	11.4
Large urban	9.8	4.2	14.0
Other urban	10.1	2.2	12.2
Rural referral	10.7	1.0	11.7
Sole community	11.0	0.2	11.2
Other rural	11.2	0.1	11.2
Major teaching	7.4	9.3	16.7
Other teaching	9.3	3.8	13.1
Non-teaching	11.5	0.2	11.7
Disproportionate share:			
Large urban	9.2	6.1	15.3
Other urban	9.9	2.4	12.3
Rural	11.0	0.8	11.8
Non-disproportionate share	10.4	2.0	12.4
Urban < 100 beds	11.3	0.3	11.6
Urban 100-249 beds	11.7	1.1	12.8
Urban 250-404 beds	10.0	2.8	12.7
Urban 405-684 beds	8.9	4.7	13.6
Urban 685+ beds	8.0	7.5	15.5
Rural < 50 beds	10.3	0.1	10.4
Rural 50-99 beds	11.6	0.1	11.7
Rural 100-169 beds	11.4	0.2	11.6
Rural 170+ beds	10.5	1.1	11.6
Voluntary	9.8	3.2	13.0
Proprietary	13.4	0.5	13.9
Urban government	8.4	3.8	12.2
Rural government	10.4	0.5	10.8

Note: Total pass-through payments also include organ acquisition payments and other Medicare inpatient hospital payments not paid under PPS. Only capital and direct medical education payments are included in this table. Excludes hospitals in Maryland and New Jersey.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

direct medical education payment percentage is highest among urban hospitals, especially those in large urban areas and with a large number of beds. This pattern reflects the distribution of hospitals with graduate medical education programs.

These data do not portray the full effect of the recent reductions in Medicare capital payments, which began in fiscal year 1987 but were gradually increased until fiscal year 1989 (the sixth year of PPS). They also do not reflect the recent change in the direct medical education payment rules. The data should be interpreted as merely indicating the extent to which different hospital groups may be vulnerable to these reductions and how their Medicare inpatient margins may be affected.

Trends in Medicare Inpatient Margins

Since the currently available Medicare Cost Report data reflect only a small portion of the effects of the recent changes in capital payment policy and none of the changes in the direct medical education payment rules, the pattern of Medicare inpatient margins is the same as that shown by the PPS margins discussed above (see Table 2-14). As with the PPS margins, they have fallen sharply from high levels in the early years of PPS.

In coming years, as the cost report data begin to reflect more of the recent changes in capital payment policy and the new rules for direct medical education payment, the Medicare inpatient margin

Table 2-14. Medicare Inpatient Hospital Margins for the First Five Years of PPS, by Hospital Group (In Percent)

Hospital Group	PPS 1	PPS 2	PPS 3	PPS 4	PPS 5
All hospitals	12.9%	13.2%	9.1%	4.9%	1.4%
Urban	13.9	14.1	10.1	5.7	2.2
Rural	7.6	8.2	3.0	-0.4	-3.0
Large urban	14.2	14.0	10.4	5.6	2.1
Other urban	13.5	14.2	9.6	5.9	2.2
Rural referral	8.5	12.3	7.5	3.4	-1.1
Sole community	6.3	5.8	1.2	-2.4	-4.2
Other rural	7.3	6.3	0.7	-2.6	-4.0
Major teaching	15.1	18.5	15.1	12.0	11.7
Other teaching	14.5	14.4	10.3	5.8	2.5
Non-teaching	11.1	11.0	6.1	1.8	-2.5
Disproportionate share:					
Large urban	14.5	14.2	12.3	8.5	6.5
Other urban	13.0	14.5	10.3	7.4	4.6
Rural	9.3	10.2	5.1	2.1	-1.4
Non-disproportionate share	12.5	12.6	7.6	2.8	-1.1
Urban <100 beds	12.1	11.9	6.2	1.5	-2.9
Urban 100-249 beds	13.0	12.5	8.3	4.0	-1.1
Urban 250-404 beds	13.8	13.5	9.6	5.1	0.9
Urban 405-684 beds	13.9	15.6	11.2	6.2	4.4
Urban 685+ beds	18.1	17.7	14.3	11.9	9.6
Rural <50 beds	5.9	5.5	-0.8	-2.6	-4.1
Rural 50-99 beds	7.7	7.0	1.6	-1.6	-4.6
Rural 100-169 beds	8.0	8.1	3.2	-0.6	-1.3
Rural 170+ beds	8.4	11.3	6.2	1.8	-2.6
Voluntary	13.3	13.5	9.6	5.3	1.8
Proprietary	12.5	13.5	8.7	3.4	-1.6
Urban government	12.9	13.2	8.7	7.1	4.4
Rural government	6.4	5.6	-0.1	-3.5	-2.3

Note: Data for each PPS year (PPS 1, PPS 2, etc.) correspond to each hospital's cost reporting period beginning in that year. For instance, the PPS 1 year includes data from each hospital's cost report beginning during the first year of PPS (Federal fiscal year 1984). Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with PPS 3.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

will become the focus of increasing attention. With the elimination of cost-based reimbursement for these categories, the Medicare inpatient margin will provide a more complete measure of how Medicare payment affects hospital financial status.

OVERALL HOSPITAL FINANCIAL STATUS

Policymakers are showing increasing interest in data on the overall financial status of the hospital industry. One reason for this is that the effects of Medicare payment policy are not independent of the policies adopted by other payers and vice versa. Another is the growing belief that, with hospitals closing at a higher rate than before PPS, Medicare beneficiaries' continued access to hospital care is dependent on hospitals' overall financial status. Hospital financial status has several components and may be measured in different ways. In this section, data on hospital resources, expenses and revenues, total margins, and other financial indicators are presented.

Hospital Resources

The provision of hospital care requires many types of resources, including labor, capital, and non-labor resources like pharmaceuticals, food, and energy. The mix of these resources is critical in determining the nature, quality, and cost of the care provided.

Inpatient Utilization—The mix and level of resources committed to inpatient care are, in part, based on the degree of facility utilization. Underutilized facilities are more costly because some resources, particularly plant and equipment, are fixed. When spread across fewer patients, the cost of fixed resources increases on a per-case basis.

Inpatient capacity utilization has declined significantly over the past several years. Since 1984, occupancy rates have remained well below those of the late 1970s and early 1980s. In 1989, the average hospital occupancy rate was 64.9 percent, a slight increase over 1988 (see Table 2-15). The number of beds has decreased at an average annual rate of 1.3 percent since the beginning of PPS and declined by 1.3 percent in 1989. This decline, combined with a slower reduction in admissions, led to the slight increase in the average occupancy rate.

Table 2-15. Change in Average Hospital Occupancy Rate and Number of Beds

Year	Occupancy Rate	Percent Change	Number of Beds	Percent Change
1980	75.9%	1.9%	970,456	1.2%
1981	75.8	-0.1	986,917	1.7
1982	74.6	-1.6	997,720	1.1
1983	72.2	-3.2	1,003,658	0.6
1984	66.6	-7.8	992,616	-1.1
1985	63.6	-4.5	974,559	-1.8
1986	63.4	-0.4	963,133	-1.2
1987	64.1	1.1	954,458	-0.9
1988	64.5	0.6	942,306	-1.3
1989	64.9	0.6	930,075	-1.3
Averages:				
1980-1983	74.6	-0.8	989,688	1.1
1984-1989	64.5	-1.8	959,525	-1.3

SOURCE: American Hospital Association National Hospital Panel Survey.

Changes in Hospital Employment—Hospital employment levels declined substantially after PPS was implemented (see Table 2-16). This decline occurred as admissions and average LOS decreased. Since 1986, however, employment levels have begun to rise. Each year between 1986 and 1989, total hospital full-time equivalents (FTEs), including both the number of full-time and part-time personnel, have increased. During these four years, the number of part-time personnel grew about twice as fast as total employment. These growth rates were both lower than before the implementation of PPS, however.

Table 2-16. Change in Hospital Employment (In Percent)

Year	Total Hospital FTEs	Total Personnel	Full-time Personnel	Part-time Personnel
1980	4.7%	5.2%	4.0%	9.1%
1981	5.4	6.0	4.8	9.4
1982	3.7	3.7	3.6	4.1
1983	1.4	1.5	1.2	2.3
1984	-2.3	-2.1	-2.6	-0.8
1985	-2.3	-1.8	-2.7	-0.1
1986	0.3	0.4	0.3	0.7
1987	0.7	0.9	0.4	2.3
1988	1.1	1.4	0.7	3.3
1989	1.6	1.9	1.2	3.6
Averages:				
1980-1983	3.8	4.1	3.4	6.2
1984-1989	-0.2	0.1	-0.5	1.5

SOURCE: American Hospital Association National Hospital Panel Survey.

Hospitals continue to experience increases in labor expenses per FTE (see Table 2-17). The rate of growth in average salary has been greater over the past three years than it was in the earlier years

Table 2-17. Change in Labor Expenses (In Percent)

Year	Labor Expenses Per FTE	Average Salary	Benefits Per FTE
1979	9.4%	9.3%	10.3%
1980	11.4	11.3	11.9
1981	13.1	12.5	17.0
1982	12.0	11.0	18.8
1983	7.9	7.2	11.9
1984	6.3	5.6	10.0
1985	6.7	6.6	7.6
1986	6.9	7.2	5.4
1987	8.4	8.6	7.5
1988	8.9	8.6	10.7
1989	8.2	7.5	11.8

SOURCE: American Hospital Association National Hospital Panel Survey.

of PPS. The growth rate for fringe benefits follows a similar trend. A decline in general inflation from 1984 to 1986 may partly account for the slower growth during those years. Continued increases in labor expenses per FTE over the past few years are likely a result of many factors, including shortages of certain types of personnel.

Within many labor categories, the growth in hospital employment was greater for less skilled types of workers than for more skilled types in 1988 (see Table 2-18). Previously, for example, the number of registered nurses (RNs) increased and the number of licensed practical nurses (LPNs) decreased, representing a shift toward a higher skill mix. In each year between 1982 and 1986, the percentage increase in RN FTEs was greater than the percentage increase in FTEs for LPNs or ancillary nursing personnel. In 1987 and 1988, the percentage increase in ancillary and other nursing personnel FTEs exceeded the percentage increase in RN FTEs. For some other categories of workers (for example, medical records and pharmacy), the 1988 data also indicate a greater growth rate for personnel in less skilled categories than in more skilled categories.

Changes in staffing patterns may reflect hospitals' efforts to address staffing shortages. Shortages have been reported in varying degrees for RNs and allied health personnel such as physical, occupational, and respiratory therapists, and laboratory and radiology technicians. Shortages can result from a decline in the supply of or an increase in the demand for personnel. The availability of more career opportunities in other fields may contribute to a reduction in the supply of personnel. Rapid

Table 2-18. Change in FTEs for Various Labor Categories (In Percent)

Labor Categories	1981	1982	1983	1984	1985	1986	1987	1988
Nursing								
Registered nurses	1.15%	6.35%	3.88%	-0.06%	1.58%	3.69%	3.14%	1.56%
Licensed practical nurses	2.65	1.56	-3.41	-10.96	-8.69	-6.77	-2.13	0.12
Ancillary and other	2.82	-2.37	-29.84	-11.88	-9.01	-3.83	3.24	4.33
Medical records								
Administrators	3.49	0.24	1.98	1.84	0.21	6.92	4.80	-2.83
Technicians	4.01	0.63	1.86	3.95	1.94	6.94	1.82	5.50
Pharmacy								
Licensed pharmacists	8.15	4.91	4.98	0.92	1.91	2.06	4.37	1.44
Technicians	10.94	6.75	4.37	-1.02	1.41	4.62	5.28	3.85
Occupational therapy								
Therapists	10.06	7.55	5.48	6.21	6.57	14.75	8.72	7.44
Assistants/aides	3.79	-0.41	-9.46	3.46	3.91	1.94	15.97	6.89
Physical therapy								
Therapists	7.71	2.63	2.79	1.91	3.69	6.01	4.71	3.27
Assistants/aides	3.27	1.93	0.33	-4.26	0.01	1.37	5.12	2.92

SOURCE: American Hospital Association Annual Survey.

developments in medical technology and the growth in the aged population may lead to an increase in the demand for certain types of personnel. Some have suggested that PPS has influenced hospitals' demand for RNs.

A study conducted for HCFA found that between 1984 and 1985 PPS contributed to greater use of RNs per adjusted admission and per adjusted patient day.¹² The data analyzed did not reveal whether the PPS effects extend beyond 1985, but the study concluded that PPS was not solely or predominately the cause of the increase in demand for RNs.

In 1988, following many reports of a shortage of registered nurses, there were several studies of the issue. One study found hospital vacancy rates of 10.5 percent for registered nurses, with higher than average vacancy rates in rural areas.¹³ The 10.5 percent vacancy rate is lower than the rates reported by the AHA for 1986 and 1987 (11.0 percent and 11.3 percent, respectively). Between 1983 and 1985, however, the AHA reported that the average vacancy rate ranged from 4.4 percent to 6.3 percent.

Reported shortages of other allied health personnel are increasing. In its 1988 Survey of Human Resources, the AHA studied vacancy rates for 20 allied health professions. Vacancy rates were highest for physical and occupational therapists, at 16.3 percent and 14.7 percent, respectively. There was substantial regional variation in vacancy rates for many of the professions studied. Vacancy rates for occupational therapists, for example, ranged from 9.2 percent in the Pacific region to 22.8 percent in the East South Central region. The AHA survey reported relatively low vacancy rates (below 7 percent) for licensed practical nurses, nurses' aides, medical laboratory technicians, medical technologists, and medical records coders.

Hospitals have implemented a variety of solutions to address staffing shortages. Strategies to increase supply include pay increases, hiring bonuses, finder's bonuses, relocation assistance, requiring staff to work overtime, and hiring personnel from temporary agencies. To reduce demand, hospitals may close beds or units, cut back on services, transfer patients to other hospitals, or

use less-skilled staff when possible. Many institutions report that they use more than one strategy to address shortages of personnel that are of greatest concern to them.

Hospital Labor Productivity—One of the key factors determining the level of hospital cost inflation is the change in productivity, or how much product is obtained for the resources spent. Increased productivity implies that the hospital is either producing more output with the same resources or the same output with fewer resources.

The measurement of hospital productivity requires an input measure and an output measure. ProPAC uses the number of FTEs as its input measure. Traditionally, it has defined the output of patient care as the number of admissions, with an adjustment for real case-mix change.¹⁴ Real case-mix change is a ProPAC estimate of the increase in the complexity of patients' conditions or their treatments. The resulting productivity measure of FTEs per admission implicitly assumes that hospital services are inputs contributing to the quality of the final output, a completed admission.

ProPAC has recently developed an alternative productivity indicator using an output measure based on hospital services, such as laboratory tests and days of nursing care. This output measure is equivalent to admissions adjusted for both real case-mix change and the change in the case-mix constant intensity of services. The alternative productivity measure is based on the assumption that all hospital services are outputs. This assumption is reasonable only if all services contribute to the quality of the ultimate product.

The Commission believes that its traditional measure of FTEs per admission continues to be most appropriate in the context of determining the annual increase in the PPS payment rates. The alternative measure is useful, however, in assessing overall industry productivity trends. It also helps in understanding the continued hospital cost inflation of the 1980s. For further discussion of these two productivity measures, see ProPAC's March 1990 *Report and Recommendations to the Secretary, U.S. Department of Health and Human Services*. That publication addresses the limitations of each measure and provides more detail on methods and data sources.

The total inpatient service output of hospitals can be viewed as having three components: admissions, case mix, and case-mix constant intensity of services. During most of the 1980s, case-mix constant intensity of services was increasing (see Table 2-19). However, it declined in the first two years of PPS. This may be due to increased efforts to review and control length of stay, as well as ancillary service usage, in response to the introduction of prospective payment and other concomitant changes. The count of admissions declined steadily after PPS began, but increased in 1988. Real case-mix change, on the other hand, has always been positive.

The productivity measure based on services output has been steadily increasing (see Figure 2-3). This increase has totaled 3.3 percent since PPS was implemented. According to the measure based on case-mix adjusted admissions, there was a significant decline in the three years before PPS, and the improvement since PPS began has been only 1.4 percent.

The pattern of productivity and intensity changes can be associated with some distinct phases of PPS. In the first two years, hospitals were uncertain about the consequences of the new payment system. Intensity declined during this period. FTEs did not decline commensurately, resulting in lower productivity (more FTEs per unit of output) using

the measure based on services. Using the FTEs per admission measure, there was an increase in productivity (decrease in FTEs per admission).

In the next two years, intensity rose significantly, perhaps in response to the high PPS margins in the early years. As a result of this additional service output, there was an improvement in productivity using the services-based measure. Using the admissions-based measure, there was a decline in productivity.

More recently, hospitals have experienced financial pressure, and the 1988 intensity increase was a moderate 0.8 percent. Productivity improved in 1988 as measured using either indicator. However, this improvement was probably fueled in part by the 1988 increase in adjusted admissions, the largest of the decade. Volume increases tend to improve labor productivity because the use of some types of labor (such as managers) is fixed as volume increases, and thus spread across more units of output. It is unclear whether 1988 was the beginning of an upward trend in productivity.

While this analysis suggests that PPS has had an impact on intensity of service increases, confounding factors make the correlation difficult to quantify. These factors include the effects of utilization review activities, new technology, and the payment practices of other payers. Over the course of the

Table 2-19. Change in Hospital Output, by Component (In Percent)

Year	Adjusted Admissions ^a	Real Case-Mix	Case-Mix Adjusted Admissions ^b	Case-Mix Constant Intensity	Total Service Output ^c
1981	0.4%	1.0%	1.4%	2.6%	4.0%
1982	0.6	1.0	1.6	2.1	3.7
1983	-0.5	1.0	0.5	3.0	3.5
1984	-1.4	2.2	0.8	-2.0	-1.2
1985	-2.3	2.4	0.1	-1.5	-1.4
1986	-1.0	2.1	1.1	2.0	3.1
1987	-0.5	1.8	1.3	2.6	3.9
1988	1.2	1.8	3.0	0.8	3.8
Averages:					
1981-1983	0.2	1.0	1.2	2.6	3.8
1984-1988	-0.8	2.1	1.3	0.3	1.6

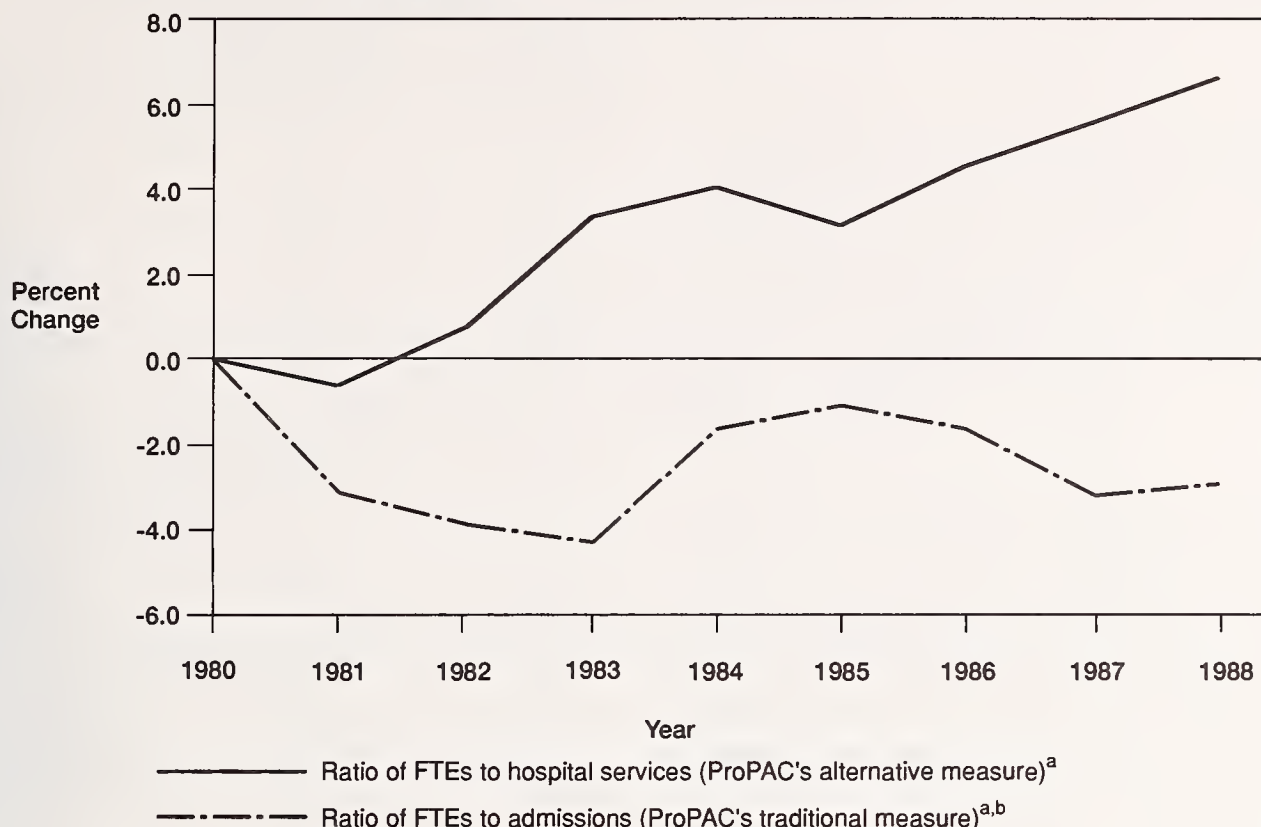
^a Adjusted for outpatient activity.

^b Sum of the change in adjusted admissions and real case-mix change -- used in the ratio of FTEs to admissions (ProPAC's traditional productivity measure).

^c Sum of the changes in all three components of hospital output -- used in the ratio of FTEs to hospital services (ProPAC's alternative productivity measure).

SOURCE: ProPAC analysis using data from the American Hospital Association Annual Survey and the Hospitals and Related Services Component of the Consumer Price Index.

Figure 2-3. Cumulative Productivity Change Using Alternative Measures



^aFTEs adjusted for skill-mix change.

^bAdmissions adjusted for outpatient activity and real case-mix change.

SOURCE: ProPAC analysis using data from the American Hospital Association Annual Survey and the Hospitals and Related Services Component of the Consumer Price Index.

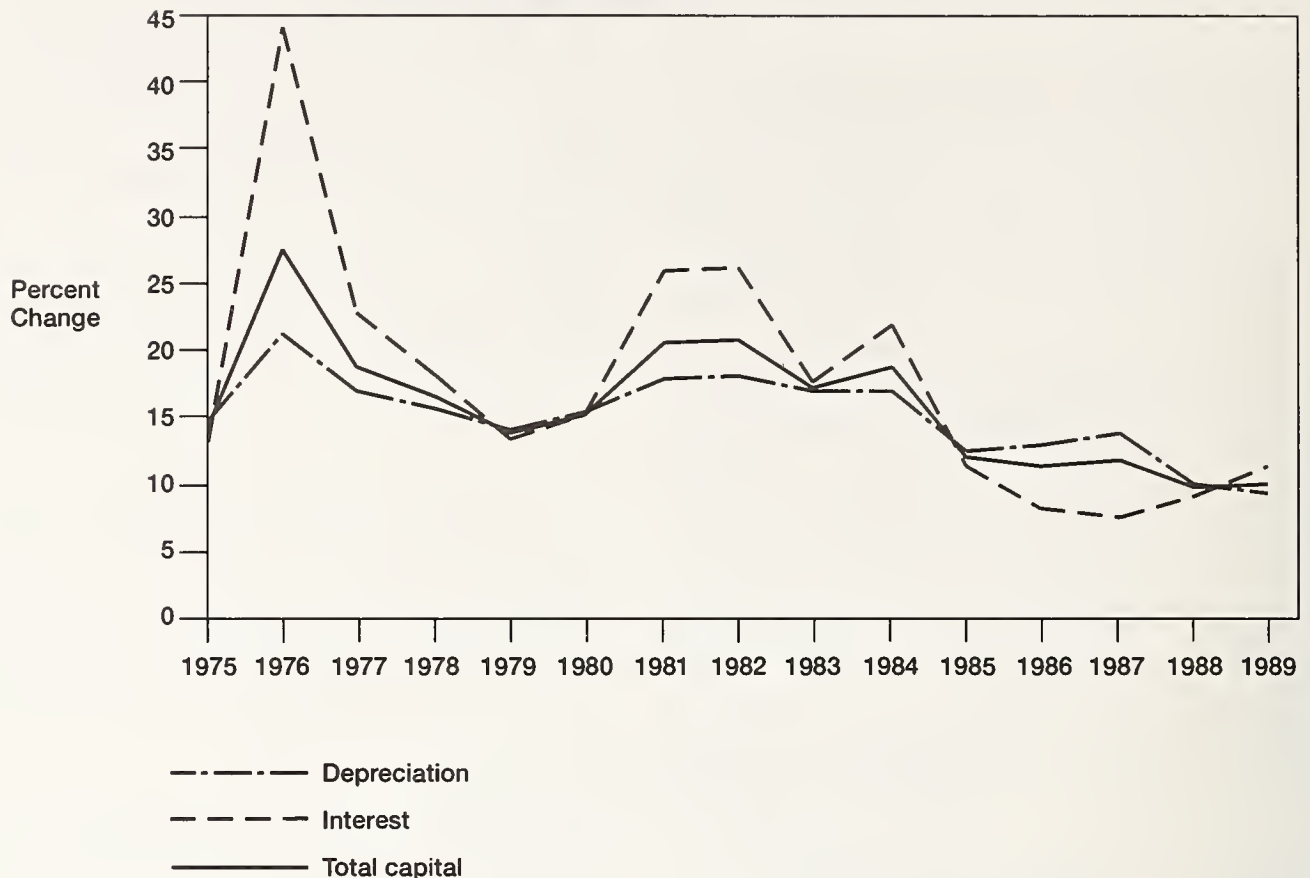
decade, however, the data suggest that increasing service intensity has been a major contributor to cost increases. The productivity results shown using the alternative measure make it clear that hospitals have become more efficient in producing services. But the gains from these efficiency improvements have been overwhelmed as hospitals have increased the number of services that they provide to each patient.

As noted earlier, accounting for intensity increases in the output measure used to assess productivity does not imply that all services contribute to improved patient outcomes. The alternative productivity measure shows only that hospitals have become more efficient in producing the services they elected to provide. Whether the industry has become more cost-effective overall depends on the extent to which the increase in services provided was critical for quality patient care.

Capital Costs—Capital costs (depreciation plus interest) grew almost 10 percent from 1988 to 1989. While this was slightly higher than the rate of growth from the previous year, the general declining rate of change since 1985 continued (see Figure 2-4). Before 1988, the slower growth in capital costs was due to smaller increases in interest expense. In 1988 and 1989, growth in depreciation expense slowed considerably. This indicates that hospitals are not investing in new physical assets at the same rate as previously.

Data on average age of plant from the Healthcare Financial Management Association (HFMA) confirm that the physical assets of hospitals are aging.¹⁵ In 1984, the median age of plant was just under seven years. By 1988, it had increased to about seven and one-half years. While there are no standards on the appropriate average age of plant, an increase indicates less hospital investment in new capital resources.

Figure 2-4. Annual Percent Change in Capital Costs (Depreciation, Interest, and Total)



SOURCE: American Hospital Association National Hospital Panel Survey.

AHA panel survey data indicate that hospital capital costs represented about 8.5 percent of total hospital costs in calendar year 1989. Capital costs were about 9.3 percent of operating costs. These proportions were the same from 1987 through 1989.

Medicare Cost Report data indicate that capital costs, as a proportion of operating costs, vary across hospital groups (see Table 2-20). The capital to operating cost ratio reflects the level of investment in capital versus other hospital resources. In addition, it reflects the timing of hospital investments (because recently acquired capital assets are more costly than older assets) and other factors. In the fifth year of PPS, the capital to operating cost ratio for major teaching hospitals was 0.102, while the ratios for other teaching hospitals and non-teaching hospitals were 0.118 and 0.134, respectively. Average capital to operating cost ratios for urban hospitals generally were higher in smaller facilities. For rural hospitals,

however, smaller facilities tended to have lower average capital to operating cost ratios.

Larger hospitals, teaching hospitals, and urban hospitals tended to have higher average Medicare inpatient capital costs per case than other types of facilities. Facilities with higher Medicare inpatient capital costs per case, however, did not necessarily have higher investments in capital relative to other costs. As a group, major teaching facilities had among the highest per-case capital costs, yet their average capital to operating cost ratio was among the lowest. This indicates that higher operating costs, rather than low capital costs, are responsible for the low ratios.

Capital Investment, Case Mix, and Financial Status—Variation in capital costs reflects many factors, such as scope and scale of services, size, location, and timing of capital investments. Capital cost variation could also be related to the characteristics of the patients treated in the hospital.

Table 2-20. Average Fifth-Year PPS Capital Costs, by Hospital Group

Hospital Group	Average Medicare Inpatient Capital Costs Per Case	Average Capital/Operating Costs Ratio
All hospitals	\$517	.123
Urban	565	.123
Rural	356	.123
Large urban	609	.121
Other urban	518	.126
Rural referral	425	.131
Sole community	353	.117
Other rural	324	.119
Major teaching	676	.102
Other teaching	542	.118
Non-teaching	480	.134
Disproportionate share:		
Large urban	649	.117
Other urban	528	.125
Rural	337	.123
Non-disproportionate share	495	.125
Urban < 100 beds	506	.132
Urban 100-249 beds	583	.141
Urban 250-404 beds	548	.121
Urban 405-684 beds	565	.114
Urban 685+ beds	628	.109
Rural < 50 beds	283	.107
Rural 50-99 beds	337	.121
Rural 100-169 beds	385	.131
Rural 170+ beds	403	.126
Voluntary	521	.122
Proprietary	596	.162
Urban government	492	.097
Rural government	318	.111

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

ProPAC was asked in OBRA 1989 to compare the financial status of hospitals with a high case mix to other hospitals, focusing on their capital investments.

ProPAC used two measures of capital investment: capital to operating cost ratios and Medicare inpatient capital costs per case. Financial status was assessed using PPS and total margins. High case-mix hospitals were defined as those in the top quartile and the top 5 percent of the distribution of the CMI. A complete discussion of this analysis will be available in a separate ProPAC technical report.

In the fifth year of PPS, capital investment in high case-mix hospitals was greater than in other hospitals (see Table 2-21). Further, these hospitals tended to have a somewhat higher proportion of their capital investment in moveable equipment. High case-mix hospitals also tended to be financially better off than hospitals with lower CMIs, as measured by both PPS and total margins. The relationship between high case mix and capital to operating cost ratios, however, was not consistent across hospital groups and over time. For urban hospitals in the fifth year, capital investment relative to operating costs was higher in hospitals with CMIs in the middle, rather than the highest, quartiles. For all hospitals during the third and fourth years of PPS, the high case-mix groups did not have the highest capital to operating cost ratios.

Table 2-21. Capital and Financial Variables in Fifth Year of PPS, by Case Mix Group

Hospital Average	Case Mix Group				
	0-25 Percentile	26-50 Percentile	51-75 Percentile	76-100 Percentile	95th Percentile
Capital to operating costs ratio	.105	.123	.133	.135	.123
Medicare inpatient capital costs per case	\$464	\$451	\$535	\$663	\$731
Moveable equipment as a proportion of total capital costs	.428	.436	.428	.453	.470
PPS margin	-13.4%	-6.4%	-4.6%	-0.7%	3.1%
Total margin	-0.6%	1.5%	2.3%	3.7%	4.4%

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

The higher capital costs in high case-mix hospitals could indicate that hospitals treating a more severely ill mix of patients required greater capital investment, particularly in major moveable equipment. On the other hand, because these hospitals also were financially better off, they were in a better position to invest in capital. For example, teaching facilities tended to have high CMIs, high margins, and high capital costs. Higher capital investments also may have allowed hospitals to improve or maintain their financial position. It is evident, therefore, that the link between hospital financial status and capital investment is complex and requires further analysis. This becomes particularly important to understand as discussions proceed about methods to incorporate capital under PPS.

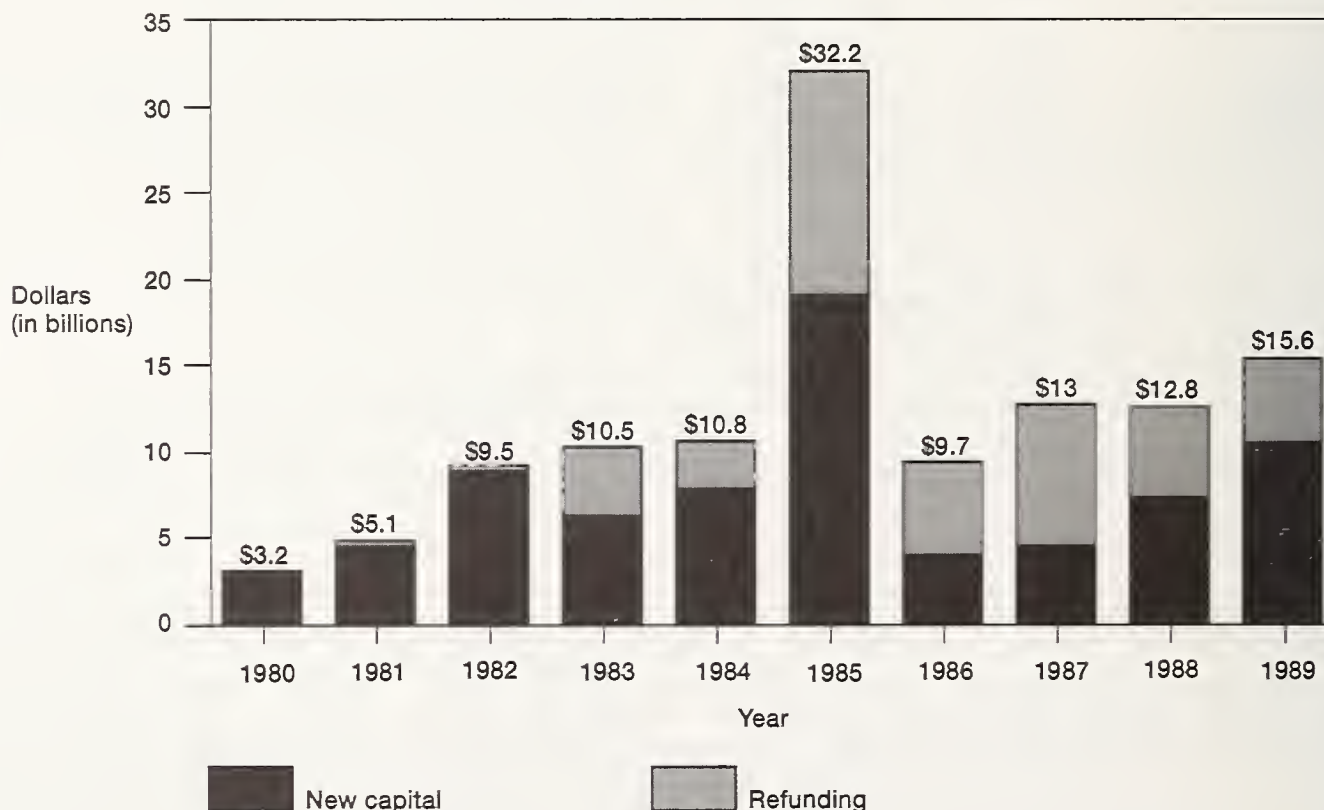
Tax-Exempt Financing and Access to Debt Markets—Debt financing has become a critical part of hospital capital financing. In 1989, total health care and nursing home tax-exempt municipal bond volume was approximately \$15.6 billion (see Figure 2-5). This represents a 22 percent increase over

1988.¹⁶ From 1982 through 1984, volume remained relatively stable. In 1985, due to uncertainty over tax reform legislation, it increased dramatically. After declining in 1986, volume began edging upward again in 1987. A large portion of the bond amount in 1986 and 1987 (56 percent and 65 percent, respectively) was related to refunding prior issues. Recently, most of the volume, 57 percent in 1988 and 67 percent in 1989, has been for new capital.

General acute care hospitals have accounted for the majority of bond volume. Between 1980 and 1983, these hospitals accounted for over 80 percent of the volume; in 1989, the proportion was 78 percent. Children's and single specialty hospitals and nursing and life-care homes are the next largest users of bonds. Bonds issued for general acute care hospitals may be used for plant and fixed equipment as well as for moveable equipment.

Hospital access to tax-exempt financing is contingent on several factors, one of which is bond rating. The bond rating reflects the market's

Figure 2-5. Health Care and Nursing Home Tax-Exempt Municipal Bond Volume



SOURCE: Securities Data Co. Inc., and Bond Buyer.

perceptions of a hospital's financial viability. Since 1983, the number of changes in hospital bond ratings has increased (see Figure 2-6). From 1983 through 1989, downgrades of bond ratings outpaced upgrades. In 1983, the ratio of downgrades to upgrades was 2 to 1. This ratio increased dramatically to 12 to 1 in 1988. In 1989, however, the ratio decreased to 3 to 1. From 1984 through 1989, there were 317 downgrades and 58 upgrades.

There are several possible reasons for the substantial decline in the overall volume of rating changes in 1989. Some analysts contend that rating agencies have fallen behind in their reviews and that the actual number of downgrades is greater than the 1989 data indicate.¹⁷ Another possible explanation is that a large proportion of the bonds issued in 1985 were conditionally rated. The majority of the bonds issued in that year were in the fourth quarter. Consequently, the larger number of rating changes during 1986 through 1988 may have resulted from a review of the 1985 issues, coupled with changes in hospital financial performance. A stabilizing bond market may also have contributed

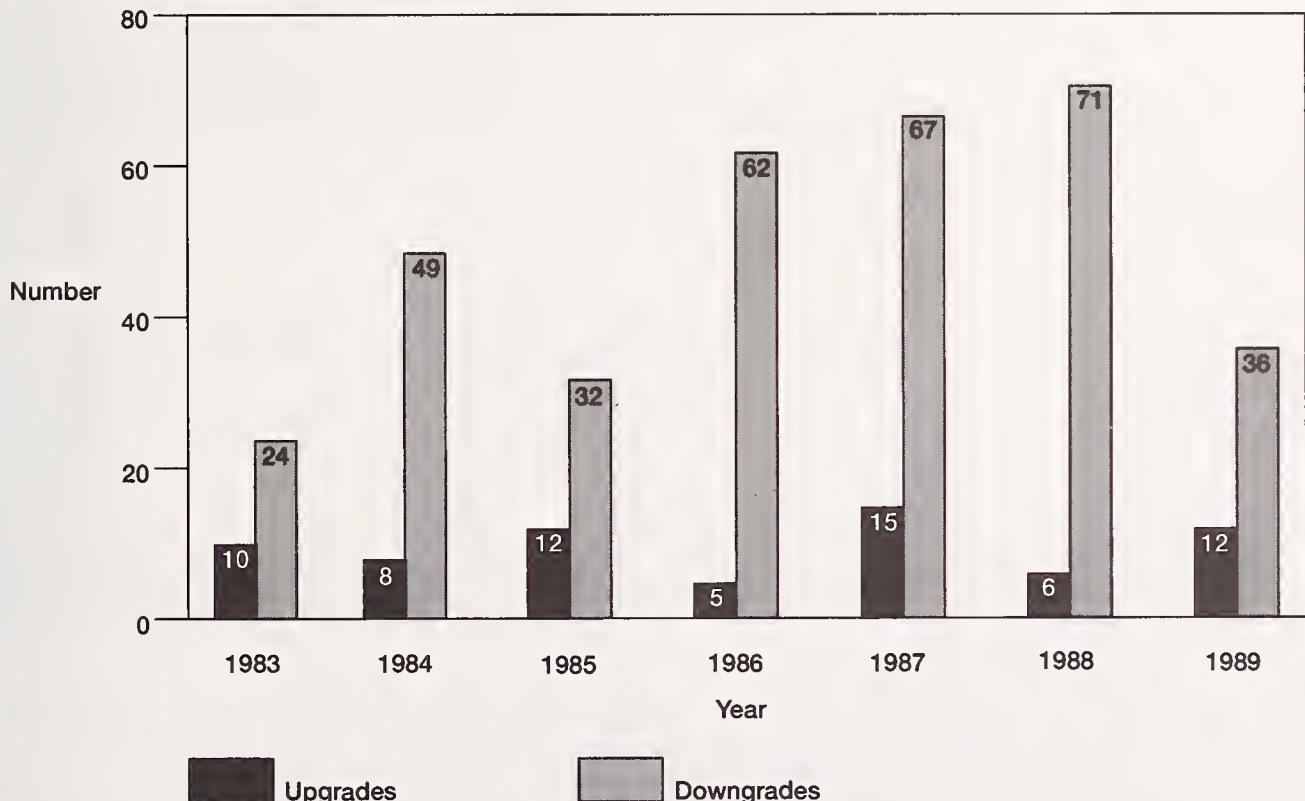
to the decline in rating changes in 1989. Finally, it is possible that only financially secure hospitals have entered the debt market in recent years, making downgrades less likely.

As the volume of tax-exempt bonds continues to grow, the Commission is interested in examining the ways in which hospitals use the proceeds from these issues. In addition, ProPAC is concerned about the effects that legislative and regulatory changes in Medicare policy may have on hospitals' access to capital. A detailed discussion of tax-exempt financing—volume, uses, and access—will appear in a ProPAC technical report scheduled for release in July 1990.

Hospital Expenses and Revenues

The keys to a hospital's overall financial status are the flows of expenses and revenues. Below, the mix of expenses is examined by presenting data on trends in costs per discharge by hospital department. Sources of hospital revenue are then described, both by the types of payers that provide

Figure 2-6. Hospital Bond Rating Changes: Upgrades and Downgrades



SOURCE: Standard & Poor's.

them and by the types of services that generate them. Trends in total expenses and revenues are then compared over time to indicate the extent to which hospitals have succeeded in controlling the increase in expenses and whether revenues have kept up with this increase.

Costs Per Discharge by Hospital Department—

Increases in costs per discharge have varied significantly by hospital department. To compare departmental cost trends, ProPAC measured expenses for 43 inpatient-related departments and then consolidated the data into nine department groups. In all nine of these groups, the average annual cost increase declined significantly after PPS was implemented (see Table 2-22). The apparent effect of PPS, however, may be exaggerated by the fact that the inflation rate for hospital inputs was higher in the pre-PPS years. These data are primarily intended to be used for examining differences in cost increases across the departmental groups rather than over time.

Cost increases have been considerably more variable across departmental groups since PPS was introduced. The groups showing the least cost growth during the first five years of PPS are also those with the greatest decline in rate of change from the pre-PPS years. This pattern suggests that cost containment efforts since PPS began may have been concentrated in certain hospital departments.

Three of the departmental groups involving patient care have had among the smallest cost increases since 1983. These are medical/surgical units and both diagnostic and therapeutic ancillary services. Cost increases in all of the departments in these groups have been moderated by the substantial decline in average LOS that occurred in the early years of PPS. When patients spend less time in the hospital, fewer hours of nursing care and fewer tests and treatments are generally required over the course of patient stays. Consequently, the five-year averages shown for these groups reflect a pattern of very small cost increases or actual declines in the first two years of PPS and much

Table 2-22. Change in Inpatient Costs Per Discharge, by Department Group

Department Group	1980	1983	1988	Average Change 1981-1983	Average Change 1984-1988	Reduction in Rate of Growth Since PPS
Inpatient:						
Medical-surgical units	\$269	\$393	\$514	13.4%	5.5%	59%
Specialty units ^a	275	428	547	15.9	8.1	49
Intensive care units ^b	99	162	274	18.0	11.2	38
Ancillary service:						
Surgical services ^c	115	174	293	14.9	10.9	26
Diagnostic services ^d	159	233	319	13.5	6.5	52
Therapeutic services ^e	59	93	129	16.7	6.6	60
General service:						
Professional services ^f	76	128	221	19.2	11.6	39
Administrative services ^g	166	259	410	16.1	9.6	40
Support services ^h	279	400	492	12.7	4.3	66

Note: The costs of medical/surgical and each specialty unit calculated using the discharges of the particular unit. All other costs expressed per hospital discharge.

^a Pediatrics, psychiatric, sub-acute, obstetrics, and nursery.

^b Medical or surgical ICU, definitive observation, and neonatal ICU.

^c Operating rooms, recovery, anesthesiology, and labor and delivery.

^d Radiology, laboratory and blood bank, nuclear medicine, CT scan, cardiac catheterization, EKG/EEG, and pulmonary function.

^e Radiation therapy, respiratory therapy, IV therapy, physical therapy, hemodialysis, and other rehabilitative services.

^f Social services, medical care evaluation, medical staff service and education, and pharmacy.

^g Administration, general accounting, patient accounts and admitting, medical records, purchasing and stores, and data processing.

^h Dietary, laundry, housekeeping, central sterile, plant operation and maintenance, security, and utilities.

SOURCE: Analysis of American Hospital Association Monitrend data by Health Economics Research, Inc., under contract to ProPAC.

greater increases in later years. This is consistent with the pattern of change in intensity of services presented above.

The surgical services and intensive care units groups had cost increases nearly double those of the groups discussed above since 1983. Comparably high cost increases also occurred in the pharmacy department (within the professional services group). The higher surgical cost increases appear to be caused primarily by changes in mix of patients. Many low-cost surgeries have been moved from the inpatient setting to alternative settings, raising the average cost of the remaining operations. Further, a rising birth rate has increased the use of labor and delivery room services per total hospital discharge. This is reflected in the increase in average cost per discharge for the surgical group of departments.

In the intensive care units and pharmacy, on the other hand, increased intensity of services and the introduction of technological advances appear to be major factors in the above average cost inflation. The proportion of patient days spent in intensive care units has increased significantly, and many expensive new drugs have been introduced in recent years.

The slowest cost growth since PPS began was 4.3 percent per year for hospital support services. However, the other two general service (or overhead) groups of departments have had above

average cost increases. In addition, two of the individual non-patient care departments had among the highest average rates of increase. These are administration (12.1 percent) and medical care evaluation (18.6 percent).

The substantial increases in administrative costs may be attributable in part to cost containment pressures and an increasingly competitive hospital market. Hospital responses to these factors have included increased marketing activities, development of information systems, and more involvement with managed care programs. While medical care evaluation remains a relatively small department, the tremendous increase in expenditures in this department reflects greater emphasis on both utilization review and quality assurance activities. These activities may be part of many hospitals' competitive strategies, but they also are required by the Medicare conditions of participation.

Sources of Hospital Revenue—Total hospital revenue has continued to increase each year since the beginning of PPS, reaching nearly \$212 billion in 1988 (see Table 2-23). After three successive increases of 6.8 percent, revenue growth accelerated to 8.0 percent in 1987 and 9.3 percent in 1988. The Medicare program contributes over half of the amount paid by government and about 28 percent of the overall total.

The mix of hospital revenue by type of service has changed over time (see Table 2-24). Outpatient

Table 2-23. Hospital Revenue, by Payment Source (In Billions)

Payment Source	1983	1984	1985	1986	1987	1988	Proportion of 1988 Revenue
Total government	\$78.4	\$84.9	\$91.4	\$98.6	\$106.2	\$115.2	54.4%
Medicare	41.1	45.3	48.5	51.0	54.0	58.3	27.5
Medicaid	13.3	14.3	15.5	16.5	18.5	20.2	9.5
Other government	24.0	25.3	27.4	31.0	33.8	36.7	17.3
Private health insurance	53.9	56.9	59.5	63.5	69.3	75.0	35.4
Out-of-pocket	7.8	8.1	8.8	8.6	8.7	11.3	5.3
Non-patient revenue	7.2	7.3	8.2	8.6	9.4	10.3	4.9
Total	\$147.2	\$157.2	\$167.9	\$179.3	\$193.7	\$211.8	100.0%
Percent change	—	6.8%	6.8%	6.8%	8.0%	9.3%	

Note: Columns may not add due to rounding.

SOURCE: Health Care Financing Administration, Office of the Actuary, Office of National Cost Estimates, 1989.

Table 2-24. Changes in Hospital Revenue and Proportion of Revenue (In Percent)

Year	Changes in Revenue				Inpatient Revenue Per Admission	Outpatient Revenue Per Visit	Proportion of Revenue		
	Inpatient Revenue	Outpatient Revenue	Other Revenue	Total Revenue			Inpatient	Outpatient	Other
1980	17.8%	19.3%	13.0%	17.7%	14.5%	15.8%	83.2%	12.5%	4.3%
1981	18.3	20.8	25.1	18.9	17.3	19.2	82.7	12.7	4.5
1982	16.2	18.1	13.2	16.3	16.2	16.8	82.7	12.9	4.4
1983	9.8	14.6	5.5	10.2	10.4	11.5	82.4	13.4	4.2
1984	4.6	14.0	8.2	6.0	8.6	12.4	81.3	14.4	4.3
1985	3.6	18.3	12.4	6.1	8.9	13.2	79.3	16.1	4.6
1986	6.2	17.3	6.5	8.0	8.5	8.3	78.0	17.5	4.5
1987	8.2	17.1	12.2	10.0	8.9	10.7	76.8	18.6	4.6
1988	8.1	18.2	16.2	10.3	8.5	11.4	75.2	20.0	4.8
1989	8.4	16.0	12.6	10.1	9.4	11.5	74.0	21.1	4.9
Averages:									
1980-1983	15.5	18.2	14.0	15.7	14.6	15.8			
1984-1989	6.5	16.8	11.3	8.4	8.8	11.2			

SOURCE: ProPAC estimates using data from the American Hospital Association National Hospital Panel Survey.

services are an increasingly important revenue source, comprising more than 21 percent of revenue in 1989, compared with 12.5 percent in 1980. Outpatient revenue has increased at an average annual rate exceeding 17 percent throughout the 1980s. By contrast, inpatient revenue grew at an average rate of only 6.5 percent per year between 1983 and 1989.

Much of the increased reliance on outpatient revenue can be explained by the shift to outpatient services described in Chapter 3. Outpatient revenue per visit has grown rapidly as well, at an average annual rate of 11.2 percent from 1984 to 1989, compared with 8.8 percent for inpatient revenue per admission. This difference may reflect the shift of more complex procedures from the inpatient setting, as well as greater emphasis on inpatient spending limits by Medicare and other payers.

Non-patient revenue has also grown faster than inpatient revenue in recent years. Sources of non-patient revenue include philanthropy, government grants, interest on endowments, and revenue from services and concessions such as physician office buildings, parking lots, and gift shops. Non-patient revenue has grown an average of 11.3 percent annually since 1983, but still represents less than 5 percent of total hospital revenue.

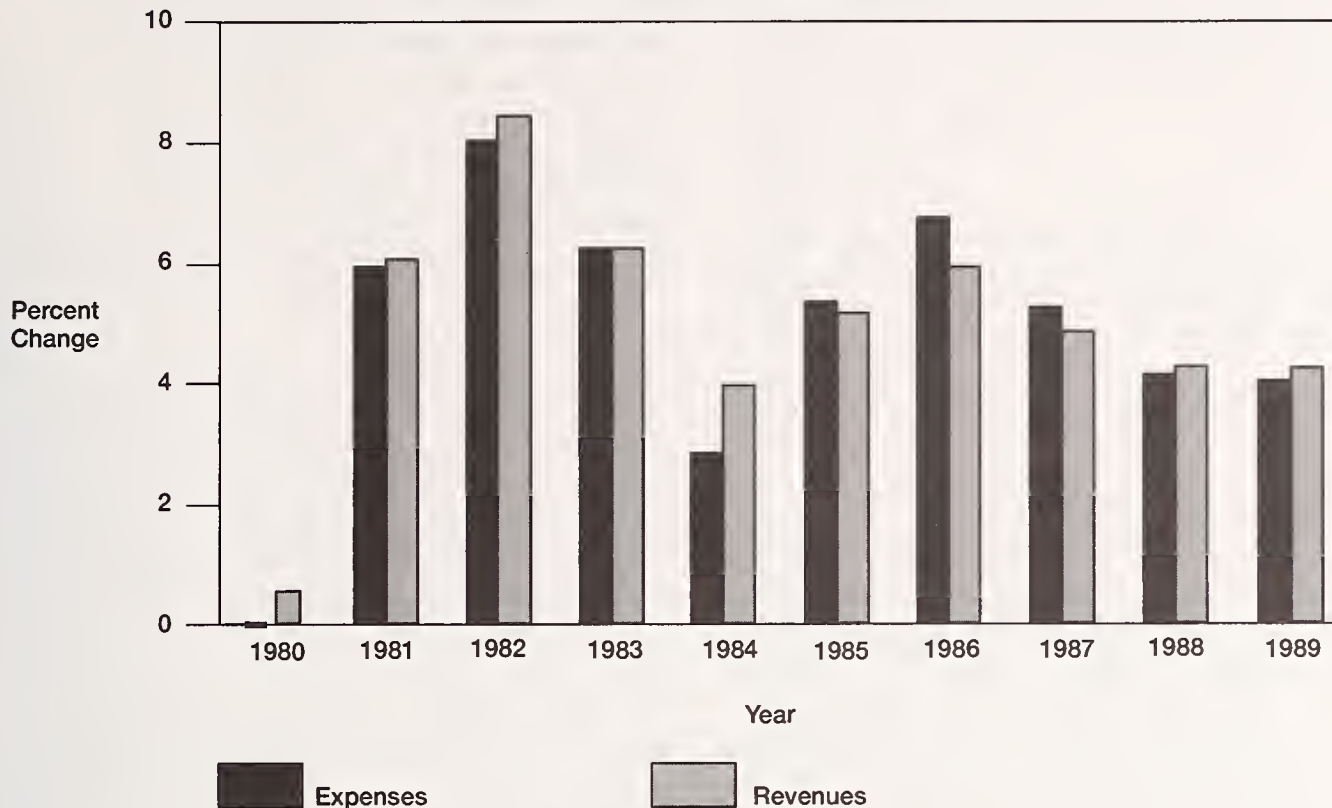
Trends in Total Hospital Expenses and Revenues—There was almost no real increase in total hospital expenses per adjusted admission in 1980 (see Figure 2-7).¹⁸ Although the nominal increase was 11.9 percent, this almost exactly matched the general rate of inflation in that year. By 1982, the real increase in total expenses per adjusted admission had risen to 8.1 percent, as the nominal increase accelerated while general inflation slowed. In 1984—the first year of PPS—the increase in real expenses per adjusted admission fell sharply, to 2.9 percent. After another surge from 1985 through 1987, the increase seems to have leveled off at just over 4 percent in 1988 and 1989.

The patterns of hospital expenses and revenues are quite similar. Revenues per adjusted admission increased at slightly higher rates than expenses in the early 1980s, but never by more than about 0.5 percentage points. In 1984, real revenues per adjusted admission rose by 4 percent, compared with 2.9 percent for real expenses—the largest difference between the two in the decade. After three consecutive years in which the increase in expenses exceeded the increase in revenues, expenses and revenues grew at approximately the same rate in 1988 and 1989.

Total Hospital Margins

The total margin is a primary indicator of the hospital's overall financial status. However, while

Figure 2-7. Changes in Real Hospital Expenses and Revenues Per Adjusted Admission, 1980–1989



SOURCE: American Hospital Association National Hospital Panel Survey and Bureau of Labor Statistics.

the analysis of total margins can be very useful, some caveats are discussed below.

The Total Margin as an Indicator of Overall Hospital Financial Status—The total margin compares hospital revenues and expenses for all inpatient and outpatient care as well as non-patient care activities. These activities include not only the treatment of Medicare and Medicaid patients, but also the treatment of patients covered by other third-party payers and those who are uninsured.

Interpreting Medicare Cost Report data on total margins is difficult because they largely depend on the accounting practices of the hospital and the relationship between the hospital and any other organizational entities to which it is related. For instance, hospitals affiliated with a chain or a medical school may differ in their reporting of revenues and expenses from those without such affiliations. There are many other questions about the accounting and analytic meaning of these margins. However, total margins derived from the

Medicare Cost Report provide important new information on hospitals' overall financial performance.

Trends in Total Margins—As was the case with the PPS and Medicare inpatient margins described above, the aggregate total margin for all hospitals decreased over the first five years of PPS (see Table 2-25). The decrease in the total margin, however, was not nearly as steep as that in the PPS margin. The total margin, which was 7.6 percent in the first PPS year, had fallen to 3.8 percent by the fifth year—a decrease of 50 percent. However, the decline in the PPS margin over the same time period was 82 percent. In the fifth year, the total margin exceeded the PPS margin for the first time since PPS began.

More recent data from the AHA indicate that the total margin has rebounded from the earlier declining trend, and is now comparable to what it was in the early 1980s before PPS. In fact, the total margin is currently considerably higher than it was at any time during the 1970s.

Table 2-25. Total Hospital Margins for the First Five Years of PPS, by Hospital Group (In Percent)

Hospital Group	PPS 1	PPS 2	PPS 3	PPS 4	PPS 5
All hospitals	7.6%	6.7%	4.9%	3.8%	3.8%
Urban	8.0	7.0	5.1	3.8	3.8
Rural	5.3	4.8	3.3	3.4	3.8
Large urban	7.7	6.7	4.7	3.2	3.1
Other urban	8.4	7.4	5.8	4.7	4.8
Rural referral	6.7	7.2	5.6	5.4	5.3
Sole community	5.0	4.1	2.8	2.1	2.6
Other rural	4.6	3.6	2.1	2.4	3.1
Major teaching	4.7	5.1	3.2	2.1	2.0
Other teaching	8.5	7.3	5.5	4.1	4.4
Non-teaching	7.6	6.6	5.0	4.2	3.9
Disproportionate share:					
Large urban	5.7	5.1	3.3	2.0	1.8
Other urban	7.9	6.8	5.4	4.0	4.8
Rural	4.9	5.2	3.6	3.5	3.9
Non-disproportionate share	8.2	7.2	5.4	4.4	4.3
Urban < 100 beds	5.9	5.2	3.0	2.3	2.3
Urban 100-249 beds	7.6	6.0	4.2	3.3	2.3
Urban 250-404 beds	7.8	6.9	5.0	3.7	3.9
Urban 405-684 beds	8.8	8.2	6.8	4.8	4.8
Urban 685+ beds	8.7	7.1	4.6	3.8	4.9
Rural < 50 beds	3.7	3.0	1.0	1.5	2.1
Rural 50-99 beds	4.7	3.3	1.9	2.2	2.8
Rural 100-169 beds	5.3	5.2	4.0	4.0	4.3
Rural 170+ beds	7.0	7.2	5.2	5.1	5.3
Voluntary	7.9	7.0	5.0	3.7	3.9
Proprietary	9.1	8.0	6.1	5.7	4.7
Urban government	5.0	4.3	3.3	2.6	2.8
Rural government	4.8	3.4	2.3	2.5	2.9

Note: Data for each PPS year (PPS 1, PPS 2, etc.) correspond to each hospital's cost reporting period beginning in that year. For instance, the PPS 1 year includes data from each hospital's cost report beginning during the first year of PPS (Federal fiscal year 1984). Excludes hospitals in Maryland and New Jersey; includes hospitals in Massachusetts and New York, beginning with PPS 3.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

Although urban hospitals had substantially higher total margins than rural hospitals in the first three years of PPS, the gap between them narrowed in the fourth year. In the fifth year, urban and rural hospitals each had an aggregate total margin of 3.8 percent. Hospitals in large urban areas had a lower total margin than other urban hospitals (3.1 percent versus 4.8 percent), and rural referral centers had a higher total margin (5.3 percent) than other rural hospitals.

Major teaching hospitals have had consistently lower total margins than other teaching or non-teaching hospitals. Although earlier data from the fifth year showed a negative total margin for major teaching hospitals in the fifth year of PPS, more

complete data show a positive total margin of 2.0 percent. This total margin is low relative to other hospital groups, but it does not indicate the bleak overall financial situation that the earlier data seemed to portray.¹⁹

As with many of the other indicators of financial status, total margins appear to be strongly correlated with hospital size for both urban and rural hospitals. Urban hospitals with at least 685 beds had a total margin of 4.9 percent in the fifth year, while those with fewer than 100 beds had a total margin of 2.3 percent. Rural hospitals with at least 170 beds had a total margin of 5.3 percent in the fifth year, while those with fewer than 50 beds had a total margin of 2.1 percent.

PPS Versus Total Margins

Examining the patterns of PPS and total margins during the first five years of prospective payment yields some interesting comparisons. As discussed above, both the aggregate PPS margin and the aggregate total margin for all hospitals have declined in every PPS year from a first-year high (see Figure 2-8). The PPS margin, however, was much higher in the first year and has declined much more steeply, falling below the total margin in the fifth year.

This indicates that other sources of revenue have been more stable than Medicare over this period. However, the relatively low recent annual updates in the PPS payment rates have reflected, in part, the response of policymakers to the initially very high PPS margins. In a sense, the true effects of PPS payment policy are just beginning to become evident.

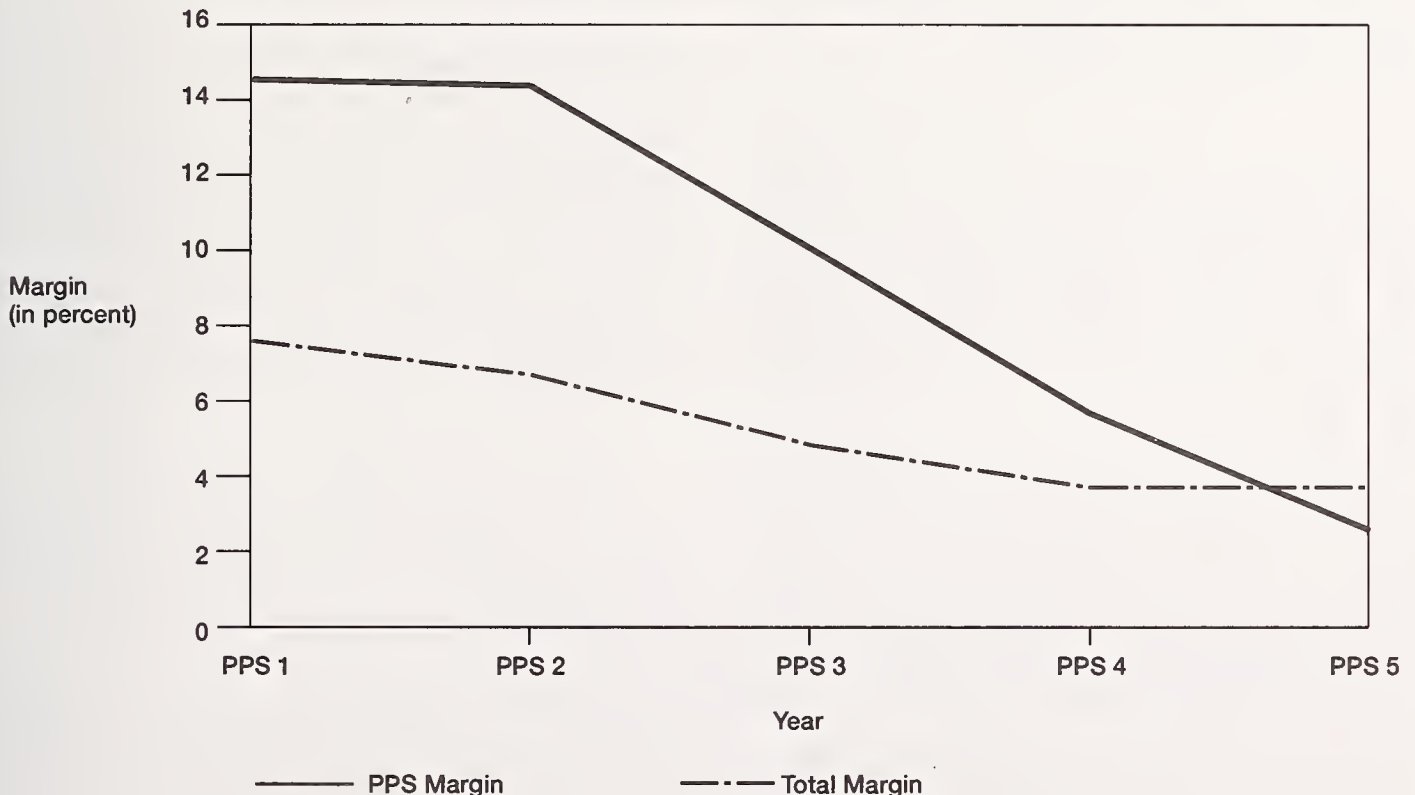
For both PPS and total margins, the trends over time differ widely across hospital groups. Moreover, there may be great differences between the patterns of PPS and total margins for any single

hospital group. For instance, the fifth-year PPS margin for urban hospitals was similar to the total margin. For rural hospitals, however, the PPS margin was substantially below zero in the fifth year, while the total margin was substantially above zero, and equal to the total margin for urban hospitals (see Figure 2-9).

For major teaching hospitals, there is a dramatic difference between PPS and total margins. While their PPS margin in the fifth year was 15.1 percent—far higher than for the other teaching and non-teaching groups—their total margin was 2.0 percent—far below the other groups.

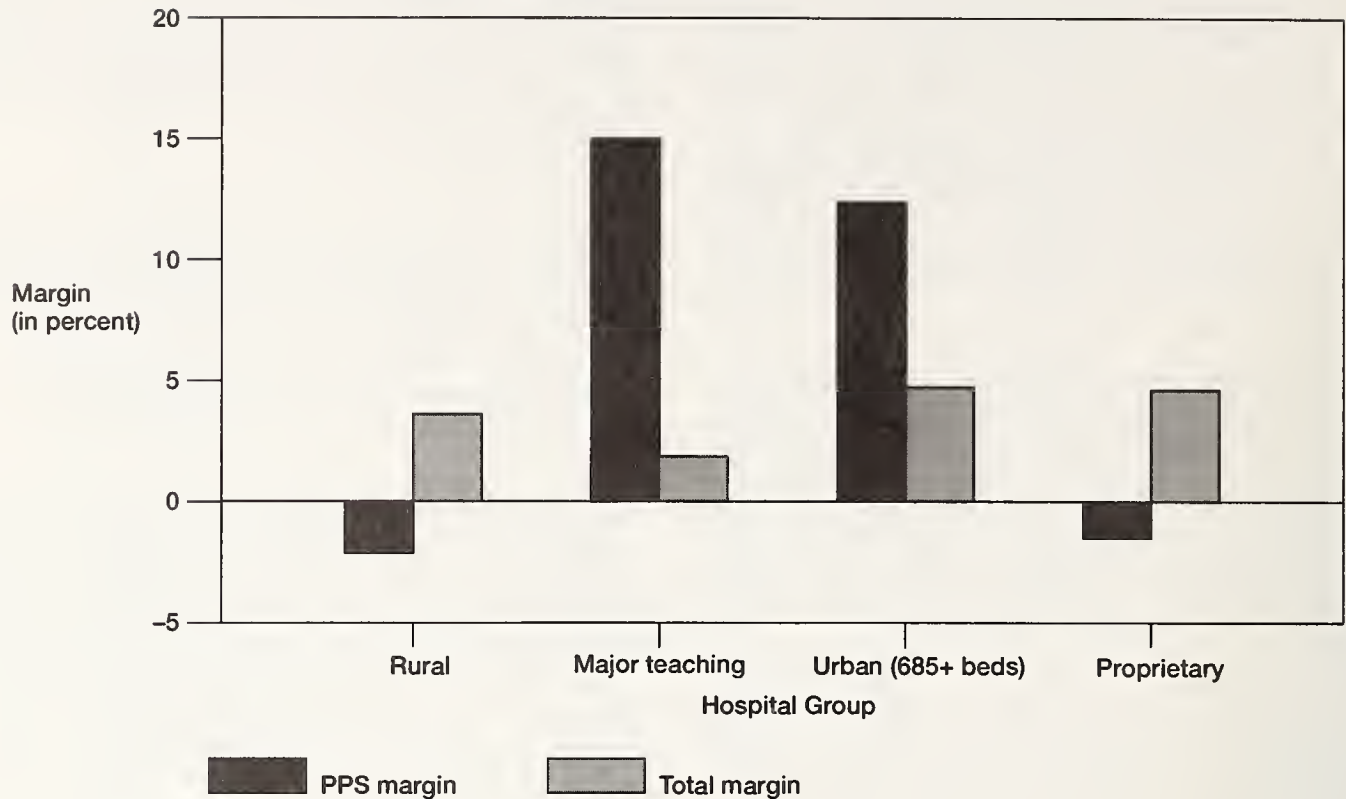
Both PPS and total margins appear to be related to hospital size. The relationship seems to be much stronger, however, in the case of PPS margins. Urban hospitals with at least 685 beds had a PPS margin of 12.5 percent in the fifth year of prospective payment, while their total margin was 4.9 percent. Proprietary hospitals also had very different PPS and total margins, with a PPS margin of -1.6 percent and a total margin of 4.7 percent.

Figure 2-8. Trends in PPS and Total Margins, First Five Years of PPS



SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

Figure 2-9. PPS and Total Margins for Selected Hospital Groups, Fifth Year of PPS



SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

Other Measures of Hospital Financial Status

Along with the total margin, other ratios can be used to measure hospitals' financial performance. New information from the HFMA and Health Care Investment Analysts relates changes in profit margins to hospitals' liquidity, capital productivity, and capital structure. The following analysis is based on the median values of a set of key financial ratios.

Liquidity—Despite lower total margins in 1987 and 1988, hospitals were able to pay their current liabilities with their current assets. In 1987, hospitals had \$2.23 in current assets for every dollar of current liabilities, which was the highest since the start of PPS. Although this ratio declined slightly in 1988, it remained relatively high.

Another common measure of liquidity is days of revenue in net accounts receivable (DNAR).²⁰ DNAR is a measure of how long it takes hospitals to be reimbursed by insurers and to collect their

bills. Following a large increase in 1987, indicative of a longer collection period, DNAR dropped slightly in 1988. This decline was encouraging, but the DNAR was still higher than in 1986. It seems likely that delays in payment have contributed to the increase in DNAR. Other factors, such as greater complexity of third-party billing and retaining receivables longer as part of more aggressive collection efforts, have also been suggested as reasons for this increase.

Capital Productivity—In 1987, hospitals' assets were about as productive as they were in 1986. Hospitals' assets grew at a slightly higher rate than revenue. However, total margins declined, so hospitals' assets were about 14 percent less profitable.

In 1988, hospitals' assets were more productive than in 1987. Assets grew more slowly than revenue. Total margin, though, was unchanged from 1987. Since the total amount of assets increased faster than total profits, the profitability of hospitals' assets dropped about 4 percent.

Capital Structure—In the aggregate, capital intensity in the hospital industry seems to be growing, although at a slower rate than previously. Net fixed assets per bed continued to increase in 1987 and 1988. However, there are large variations in this measure across hospital types.

Hospitals have been using proportionately more debt than equity to acquire fixed assets since the start of PPS. In 1984, 57 percent of net fixed assets were acquired with debt. By 1988, 66 percent of net fixed assets were acquired with debt. Large hospitals have a greater proportion of net fixed assets financed by debt, about 70 percent in 1988. This probably reflects their better access to public debt markets.

Since 1986, hospitals' annual debt service (principal and interest repayment) has increased faster than hospitals' ability to pay. Although the funds available for debt repayment increased faster than annual debt service from 1984 to 1986, the combination of more debt and lower total profit margins is lowering the ratio of annual debt service to profits. In 1987 and 1988, this ratio was lower than in 1984. Among hospitals with bonds rated A or better by Standard & Poor's, however, the ratio remains relatively high and the decline has been slower. Some of these hospitals have shown substantial improvements in their ability to repay debt.

In summary, the latest data show that hospitals had an adequate amount of short-term assets, and long-term fixed assets continued to increase. However, margins were not increasing, and as a result these assets were less profitable. Hospitals also were using more debt to acquire their assets. Growing annual debt obligations with low margins is an unfavorable trend. The effect of the increase in total margins in 1989 remains to be seen.

HOSPITAL CLOSURES IN 1988

The financial problems of some hospitals may be so severe that they are forced to close. Between 1982 and 1988, the number of closures occurring each year increased. In most respects, hospitals closing in 1988 exhibited characteristics similar to those that closed earlier in the decade. For example, they usually had fewer than 200 beds and were non-teaching facilities. However, while a greater

proportion of the hospitals that closed in the early 1980s were in urban areas, more recently there were more closures in rural areas.

ProPAC analyzed data from 1984 through 1987 for hospitals that closed in 1988. Because of the significant differences between urban and rural hospitals, they were examined separately. In addition, the hospitals that closed were compared with hospitals that remained open in 1988. The open hospitals studied were restricted to those with fewer than 200 beds because hospitals that closed were predominately in this size group.

Several characteristics were used to describe both closed and open hospitals. Trends in these characteristics were different for the closed group over the four years before closure compared to the open group over the same time span (see Table 2-26).

Admissions to all hospitals decreased from 1984 through 1987. For the closed hospitals, however, admissions declines were far greater than for the open hospitals. The admissions decreases for the closed hospitals in both urban and rural areas were the greatest in 1987, the year preceding closure. Due to these larger admissions declines, occupancy rates at hospitals that closed in 1988 were consistently lower over the study period. By 1987, both urban and rural hospitals that closed had occupancy rates of about 35 percent.

The drop in admissions resulted in an increase in the number of employees (as measured by FTEs) per admission. Urban hospitals closing in 1988 had fewer FTEs per admission in 1984 than the comparison group. From 1985 through 1987, however, this ratio grew faster for the hospitals that eventually closed. Among rural hospitals, this measure differed significantly for the closed hospitals only in 1987, the year before closure.

There were also differences in average LOS between the closed and open hospitals. In 1984, average LOS for urban hospitals that closed in 1988 equalled that for the open group. However, while average LOS remained basically unchanged in the open hospitals, it increased for those that closed. The same general pattern held among rural hospitals.

Table 2-26. Characteristics of Open Hospitals and Hospitals that Closed in 1988

Characteristics	Urban		Rural	
	Open	Closed	Open	Closed
Change in admissions				
1984	--	--	--	--
1985	-3.0%	-1.6%	-8.6%	-14.2%
1986	-1.5	-12.2	-5.5	-14.9
1987	-3.1	-21.3	-4.2	-17.9
Occupancy				
1984	59.5%	50.0%	52.2%	43.4%
1985	54.5	44.8	46.4	40.4
1986	53.8	36.3	45.0	37.5
1987	53.7	37.9	44.8	33.3
FTEs per admission				
1984	0.076	0.073	0.067	0.068
1985	0.081	0.093	0.073	0.074
1986	0.086	0.103	0.079	0.080
1987	0.092	0.115	0.084	0.097
Length of stay				
1984	6.4	6.4	6.3	6.9
1985	6.2	7.4	6.1	7.0
1986	6.2	7.0	6.1	7.1
1987	6.3	7.2	6.2	7.4
Case-mix index				
1984	1.06	1.06	1.00	0.95
1985	1.10	1.08	1.03	0.96
1986	1.12	1.09	1.05	0.96
1987	1.14	1.11	1.06	0.98
Medicare discharges as a percent of total discharges				
1984	35.8%	34.4%	40.5%	43.7%
1985	35.2	35.1	40.3	42.1
1986	36.2	30.2	41.1	42.4
1987	36.8	34.5	41.2	43.8

Note: Excludes open hospitals with more than 200 beds.

SOURCE: ProPAC analysis of American Hospital Association Annual Survey data.

The case-mix index was the same in 1984 for both groups of urban hospitals. By 1987, however, the CMI for the hospitals that stayed open had risen more than for those that closed in 1988. The CMI for rural hospitals that closed started out lower than for those that stayed open, and increased more slowly.

Urban hospitals that closed in 1988 consistently had a smaller proportion of Medicare discharges than the hospitals that remained open. The opposite was true for rural hospitals. Rural hospitals that closed in 1988 consistently had a greater share of Medicare discharges, although the differences were not large.

Throughout the study period, the rural hospitals that remained open had higher PPS revenues and operating costs per discharge than the rural hospitals that closed (see Table 2-27). This reflects the significantly lower average CMI for the hospitals that closed.

Among urban hospitals, on the other hand, closures had higher revenues per discharge in three out of the four years. They also had higher costs per discharge than the urban hospitals that remained open. This would seem inconsistent with their lower CMIs. Average costs and payments for these hospitals, however, were substantially influenced by the fact that several were located in areas with very high wage levels. These high labor costs were reflected in the Medicare costs and payments of the urban hospitals that closed.

Not surprisingly, hospitals that closed in both urban and rural areas in 1988 had much lower PPS and total margins than open hospitals. This was true for the entire period, 1984 through 1987.

Table 2-27. Financial Performance of Open Hospitals Compared to Hospitals that Closed in 1988

Financial Measure	Urban		Rural	
	Open	Closed	Open	Closed
PPS revenue per case				
1984	\$3,204	\$3,222	\$2,093	\$1,784
1985	3,498	3,360	2,215	1,898
1986	3,599	3,673	2,268	1,855
1987	3,793	3,967	2,376	2,056
Medicare inpatient operating costs per case				
1984	2,798	2,944	1,957	1,704
1985	3,094	3,257	2,106	1,876
1986	3,352	3,812	2,289	2,064
1987	3,638	4,439	2,478	2,471
PPS margin				
1984	12.0%	9.6%	5.8%	4.4%
1985	11.6	4.2	4.4	1.1
1986	6.8	-3.1	-1.8	-11.8
1987	3.6	-10.6	-5.0	-20.1
Total margin				
1984	5.1	1.5	3.6	-0.7
1985	4.5	-0.6	2.5	-5.0
1986	2.4	-7.4	1.0	-7.3
1987	1.8	-15.2	1.2	-12.0

Note: Excludes open hospitals with more than 200 beds.

SOURCE: ProPAC analysis of Medicare Cost Report data from the Health Care Financing Administration.

Urban hospitals that eventually closed had higher PPS margins than total margins throughout the study period. Rural hospitals that closed had higher PPS margins than total margins in 1984 and 1985, but their PPS margins were lower than their total margins in 1986 and 1987.

These data indicate that, in both urban and rural areas, hospitals that closed in 1988 differ from those that remained open. More information on the effects of hospital closures on program expenditures and services is presented in Chapter 3.

CONCLUSIONS

More data on hospital financial performance are available than ever before. Yet in some ways these data, by raising many new questions as others are answered, make it more difficult to assess the impact of PPS.

The data presented here and the questions they raise underscore the fact that health policy decision-making is a complex process. In the case of PPS, Medicare has a responsibility to pay hospitals ade-

quately and fairly for the services they provide to beneficiaries. If PPS payments either over- or undercompensate for the costs of providing these services, then the system will fail to encourage the efficient provision of appropriate services.

On the other hand, while Medicare is a major payer for hospital services, it is not the only—and frequently not the dominant—source of hospital payment. Understanding the interaction between Medicare and other sources of payment and its relationship to the cost of care is critical to the development of hospital payment policy. These are forces that affect both the availability and quality of hospital care not only for Medicare beneficiaries but for all Americans.

It is important to strike an appropriate balance between the objectives of PPS payment and the broader implications of PPS payment decisions for the hospital industry and the patients it treats. The availability and continued analysis of data on PPS and total margins will, in the Commission's view, facilitate the framing and evaluation of policies that are sensitive to both of these considerations.

Notes to Chapter 2

1. Based on an estimate from the Health Care Financing Administration, Office of the Actuary, Office of National Cost Estimates.
2. Estimate from the Congressional Budget Office.
3. In OBRA 1989, disproportionate share payments were substantially increased beginning in April 1990. The estimates reported here incorporate these and other changes enacted in this legislation.
4. The percentage changes discussed here are not estimates of changes in actual PPS payments. Per-case payment rates were simulated under the policies in effect during each of the first seven years of PPS, holding both case mix and volume constant. All changes were assumed to have been in effect for the entire fiscal year in which they were implemented. The effect of these and other simplifying assumptions has not been estimated, but it is unlikely to distort the general conclusions of the analysis.
5. Small rural Medicare-dependent hospitals are defined in OBRA 1989 as rural hospitals with fewer than 100 beds and a Medicare share of discharges or inpatient days of at least 60 percent.
6. The case-weighted CMI is the average DRG weight over all cases. The hospital-weighted CMI is the average CMI for all hospitals. The hospital-weighted CMI in 1981 was 1.000. Because larger hospitals tend to have higher CMIs, the case-weighted CMI (which weights larger hospitals more heavily) tends to be higher than the hospital-weighted CMI (which weights all hospitals equally).
7. The aggregate margin for a group of hospitals is calculated by comparing aggregate payments with aggregate costs for the group. The aggregate margin thus describes the relationship between payments and costs for the group as a whole, and not necessarily the financial status of the typical hospital in the group.
8. Under cost-based reimbursement, Medicare operating costs and payments were equal by definition. The Medicare operating margin—analogue to the PPS margin—would thus have been zero in the years prior to PPS.
9. Data on the fifth year of PPS are based on the latest available Medicare Cost Report file, which is approximately 75 percent complete. These data are subject to change as more cost reports are received and processed over time. Differences between these and earlier ProPAC estimates based on a previous file can be attributed to differences in the completeness of the files.
10. Because the latest data on PPS margins are from the fifth year of PPS, they do not reflect changes implemented more recently. Many of these changes favor groups of hospitals that had low PPS margins. Therefore, as data for the sixth and seventh years of PPS become available, some of the patterns described here may change.
11. The high Medicare groups consisted of urban hospitals with a Medicare share of inpatient days of at least 65 percent and rural hospitals with a Medicare share of at least 70 percent.
12. *An Examination of the Relationship Between Medicare Prospective Payment and the Nurse Shortage*, prepared by the Project HOPE HCFA Health Policy Research Center, under HCFA Cooperative Agreement No. 99-C-99168/3-01, February 1989.
13. Study results from a survey conducted by Executive Compensation Service and reported in an article by Linda Perry, "Hospitals Go to Market for Nurses," *Modern Healthcare* 19(14): 24-31, April 7, 1989.

14. The count of admissions used is the measure of adjusted admissions developed by the American Hospital Association. This measure is a weighted average of inpatient admissions and outpatient visits, designed to reflect the hospital's entire patient care workload in inpatient admission equivalents.
15. William O. Cleverley, *Hospital Industry Financial Report, 1984-1988* (Westchester, IL: Healthcare Financial Management Association, 1989). Additional information indicates that the increase in average age of plant generally is consistent across hospitals that differ in size and urban or rural location. See Deloitte & Touche and Health Care Investment Analysts, Inc., *The Sourcebook: The Comparative Performance of U.S. Hospitals, 1989 Edition* (Chicago, IL: Deloitte & Touche; Baltimore, MD: Health Care Investment Analysts, Inc., 1989).
16. The bond volume described in this report differs slightly from that in earlier reports due to changes in the collection of data.
17. Barnet Sherman, "How Investors Evaluate the Creditworthiness of Hospitals," *Healthcare Financial Management* 44(3):25, March 1990.
18. Total expenses and revenues per adjusted admission are indicators of overall expenses and revenues per unit of hospital output reported by the American Hospital Association. Adjusted admissions measure only output related to patient care (inpatient admissions and outpatient visits) while both total expenses and total revenues include non-patient care activities. These indicators may therefore be somewhat misleading if the mix of inpatient and outpatient care or the mix of patient care and other hospital activities changes over time. They are, however, the best available indicators of overall hospital expenses and revenues per patient.
19. The data also indicate that 33 percent of all major teaching hospitals had negative total margins in the fifth year of PPS. This is about the same percentage as for non-teaching hospitals, however.
20. DNAR equals net accounts receivable times 365 divided by net patient revenue.

Chapter 3

Hospital Inpatient Care and Other Services

Hospital Inpatient Care and Other Services

Medical advances, along with attempts to control health care spending by Medicare and other third-party payers, are influencing both the types of services received and the site of care. The most prominent change is a shift in the site of care from the inpatient to the outpatient setting. The Commission is concerned about the impact of these changes on the quality of health care services and on access to needed care for Medicare beneficiaries.

This chapter begins with a description of changes in the sites where health care services are delivered. Trends in utilization of hospital inpatient care and the growth in the number of PPS-excluded facilities and discharges are described. The utilization of post-acute care services, particularly skilled nursing facilities, home health care, and hospice care are then summarized. This is followed by a discussion of the impact of PPS on the diffusion of new technologies and on the growth of services offered in inpatient and ambulatory sites of care.

The second part of the chapter focuses on how changes in utilization have affected both access to and quality of care. As admissions decline and some hospitals close, the Commission is concerned about beneficiary access to care, particularly in rural areas. To address this issue, ProPAC conducted three small-scale studies that examined the availability of hospital services and their use by beneficiaries living in rural areas. These studies' results are summarized.

In the third part of the chapter, specific quality of care issues are examined. The Commission identifies four areas in which responses to PPS incentives may jeopardize the care received by Medicare beneficiaries. The first study updates ProPAC's examination of hospital readmission and transfer patterns. Inpatient utilization patterns for select groups of Medicare patients who may be especially vulnerable if quality of care declines are

then examined. The next section evaluates trends in concentration of specialized procedures. Research indicates that many procedures are most safely and efficiently performed when they are done frequently at individual hospitals. The final study reviews the episode of care for Medicare beneficiaries admitted for hip fracture and replacement. This analysis describes the patterns of care provided to these Medicare beneficiaries and examines their use of post-acute care services.

Finally the chapter examines new developments in the review and evaluation of quality of care in both inpatient and outpatient settings. It begins with a discussion of the current quality assurance mechanisms for inpatient and outpatient services. Several shortcomings in these programs are then described, and issues of appropriateness and effectiveness of care are reviewed.

UTILIZATION OF HOSPITAL INPATIENT CARE

Broad trends in utilization of hospital inpatient care are generally measured by the number of inpatient stays (admissions or discharges) and the average length of stay. Total admissions to short-term general acute care hospitals have been declining since 1982 (see Table 3-1). The overall trends show, however, that admission patterns for the elderly differ substantially from those for persons under 65 years of age. Admissions of people under 65 reached 27 million in 1981, but fell to 22 million in 1989—a cumulative decline of almost 19 percent. Admissions of persons 65 or older continued to increase until 1983 and subsequently declined until 1986. Since then, they have increased slowly. As a result, admissions of elderly patients declined from 11.8 million in 1983 to 11.2 million in 1989, or about 5 percent.

These trends are even more striking on a per capita basis. In 1980, there were 134 admissions

Table 3-1. Annual Percentage Change in Hospital Admissions

Year	All Admissions	Admissions by Age	
		Under 65	65 and Over
1978	0.4%	-1.0%	4.9%
1979	2.7	1.7	5.3
1980	2.9	1.5	6.7
1981	0.9	0.0	3.0
1982	0.0	-1.6	4.1
1983	-0.5	-2.8	4.7
1984	-3.7	-4.2	-2.6
1985	-4.9	-4.7	-5.2
1986	-2.1	-2.5	-1.0
1987	-0.6	-1.0	0.4
1988	-0.4	-1.6	2.0
1989	-1.0	-2.0	1.2
Average:			
1978-1983	1.0	-0.4	4.8
1984-1989	-2.1	-2.7	-0.9

SOURCE: American Hospital Association National Hospital Panel Survey.

per 1,000 persons under 65. The rate had fallen by 1989 to 101 admissions per 1,000, a cumulative decline of almost 25 percent. In contrast, the admission rate for the elderly peaked at 431 per 1,000 in 1983, declining from 1983 through 1989 by about 15 percent. Hospital use by this group fell to a low of 363 per 1,000 persons in 1987. Small increases in 1988 and 1989 raised the rate slightly, to 368.

Average length of stay was decreasing slowly before the implementation of PPS (see Table 3-2). The introduction of PPS was accompanied by a brief acceleration of this trend, especially for elderly patients. However, average LOS has remained relatively stable for all groups of patients since 1985.

Trends in LOS and admissions reflect a combination of several factors. PPS payment policies, together with utilization review policies, created direct incentives for hospitals and physicians to shorten inpatient stays. At the same time, important changes were occurring in medical technology, while the variety of services that could substitute for inpatient care was increasing. These changes made it easier for physicians to discharge some patients earlier without sacrificing the quality of care. In addition, certain services, such as diagnostic tests, may now be performed before admission.

Further, for certain conditions, outpatient care also may substitute for an inpatient admission. This is usually limited to types of cases that formerly would have had relatively short inpatient stays. Consequently, such substitution generally tends to increase average LOS since the remaining inpatient cases are those with longer stays.

The current stability of average LOS may indicate that unnecessary days have been eliminated or that opportunities for substitution of outpatient care or other types of services for inpatient services have largely been exhausted. Alternatively, it may mean that continuing substitution has little or no overall effect on average length of stay.

The continuing decline in total admissions, along with decreased LOS, has dramatically changed utilization of inpatient care. However, the duration and rate of decline have differed greatly among groups of hospitals (see Table 3-3). The decline in admissions began earlier for rural than for urban hospitals. In addition, the rate of decline for rural hospitals was about two times larger than the rate for urban hospitals. Therefore, the cumulative decrease in total admissions from 1980 to 1988 was 35 percent for rural hospitals but only 6 percent for urban hospitals.

Data from hospitals' annual Medicare Cost Reports for part of this period show that declines in admissions were consistently much greater than average for small hospitals, whether they were located in urban or rural areas. From 1983 to 1988, total admissions to rural hospitals with fewer

Table 3-2. Trends in Length of Stay for Adult Patients, by Age

Year	Length of Stay		Percent Change	
	All Adults	Adults 65 and Over	All Adults	Adults 65 and Over
1978	7.22	10.58	-0.3%	-1.2%
1979	7.14	10.38	-1.1	-1.9
1980	7.18	10.37	0.6	-0.1
1981	7.21	10.36	0.4	-0.1
1982	7.16	10.12	-0.7	-2.3
1983	7.02	9.68	-2.0	-4.4
1984	6.66	8.95	-5.1	-7.5
1985	6.55	8.76	-1.7	-2.1
1986	6.59	8.79	0.6	0.4
1987	6.64	8.88	0.8	1.0
1988	6.64	8.82	0.0	-0.7
1989	6.64	8.84	0.0	0.2

SOURCE: American Hospital Association National Hospital Panel Survey.

Table 3-3. Annual Percentage Change in Total Admissions for Urban and Rural Community Hospitals

Year	Community Hospitals		
	All	Urban	Rural
1980	3.0%	2.9%	3.1%
1981	0.8	3.5	-7.4
1982	-0.2	0.1	-0.9
1983	-0.6	0.7	-5.2
1984	-2.8	-2.0	-5.3
1985	-4.9	-3.9	-8.4
1986	-3.2	-2.3	-6.8
1987	-2.4	-1.6	-5.7
1988	-0.5	-0.1	-2.0
Averages:			
1980-1983	0.7	1.8	-2.7
1984-1988	-2.7	-2.0	-5.7

SOURCE: ProPAC calculations based on unpublished data from the American Hospital Association Annual Survey.

than 50 beds decreased by 32 percent, while the average decrease for all rural hospitals was about 22 percent. Similarly, total admissions to urban hospitals with fewer than 100 beds decreased 28 percent, while the average decline for all urban hospitals was only about 9 percent.

These data indicate that the volume of inpatient care has declined substantially over a relatively short period, and that the magnitude of this change has been much greater for small hospitals. The Commission will continue to monitor these trends as part of its efforts to assure that access to high-quality care is maintained for people living in rural areas.

Further, declines in the volume of inpatient care in small urban and rural hospitals may reflect a shift in the site of inpatient care from these hospitals to larger urban hospitals. If this is so, a continuation of these trends may increase the overall cost of inpatient care for the nation as a whole, since larger urban hospitals tend to have higher costs per case than other hospitals.

PPS-EXCLUDED HOSPITALS AND DISTINCT-PART UNITS

Part of the decline in inpatient care in short-stay general acute care hospitals may be due to increases in the number of patients admitted to specialty hospitals. When PPS was implemented, certain hospitals and distinct-part units were excluded. These facilities continue to be reimbursed on the basis of reasonable costs subject to Tax Equity and Fiscal Responsibility Act rate of increase limits. Rehabilitation and psychiatric hospitals and distinct-part units, as well as children's and long-term hospitals, are excluded from PPS.

The number of PPS-excluded facilities has grown since 1984, but patterns have not been uniform across the various types (see Table 3-4). Rehabilitation facilities experienced the most rapid growth between 1984 and 1989. During this period, rehabilitation hospitals increased 145 percent, while distinct-part units increased 104 percent. Psychiatric facilities have experienced the second largest growth, although they represent the majority of PPS-excluded facilities.

Table 3-4. Growth in Number of PPS-Excluded Hospitals and Distinct-Part Units

Type of Facility	1984	1985	1986	1987	1988	1989	Percent Change 1984-1989
Hospitals							
Psychiatric	439	481	515	578	608	650	48%
Rehabilitation	49	68	79	84	100	120	145
Long-term	84	86	92	87	87	88	5
Children's	47	53	55	60	58	59	26
Total	619	688	741	809	853	917	48
Distinct-part units							
Psychiatric	722	762	906	950	1,051	1,104	53
Rehabilitation	308	386	473	535	565	628	104
Total	1,030	1,148	1,379	1,485	1,616	1,732	68

Note: Number of facilities as of September 1 of each year.

SOURCE: Health Care Financing Administration, Health Standards and Quality Bureau.

The number of discharges from PPS-excluded facilities also grew steadily from 1984 to 1988. Distinct-part units experienced the fastest growth in number of discharges during this period (see Table 3-5). PPS-excluded hospitals and distinct-part units will be a priority for analysis over the next year.

POST-ACUTE CARE SERVICES

Services provided in excluded and other facilities are substituting for some inpatient care days. Other post-acute care services may also substitute for days at the end of a stay and are partially covered by Medicare.

Skilled Nursing Facilities

Extended care services, such as skilled nursing and rehabilitation services furnished to an inpatient at a skilled nursing facility, are partially covered under Medicare. A SNF may be either a separate institution or a part of the hospital (including the swing bed portion of a hospital).

Medicare covers up to 100 days of extended care per spell of illness. The beneficiary pays no coinsurance for the first 20 days of SNF care, then pays a daily coinsurance equal to one-eighth of the hospital deductible (\$74 in 1990) for days 21 through 100. Such services are covered if a patient has been in the hospital for at least three days and is transferred to a SNF within 30 days of discharge.

If beneficiaries stay more than 100 days, they are responsible for payment, often spending down personal assets until eligible for Medicaid coverage.

While the provisions of the Medicare Catastrophic Coverage Act of 1988 were in effect for less than a year, they had a significant impact on SNF utilization and expenditures in 1989. MCCA eliminated the three-day prior hospitalization rule and spell of illness requirement, and extended coverage from 100 to 150 days. The coinsurance policy was also changed. Beneficiaries were required to pay 20 percent of the average SNF rate (about \$25.50) for the first through the eighth days.

These benefit changes apparently motivated numerous beneficiaries to seek Medicare SNF coverage, including many who had been receiving benefits under Medicaid. As a result, 1989 Medicare-incurred expenditures were \$3.6 billion, an increase of 270 percent over 1988. Admissions of Medicare beneficiaries for SNF care increased by 57 percent, Medicare-covered SNF days increased by almost 200 percent, and days per patient served increased by more than 82 percent. About 550,000 Medicare beneficiaries used the SNF benefit, receiving almost 33 million Medicare-covered days of care in 1989 (see Table 3-6).

Following repeal of the Act in 1989, the three-day prior hospitalization rule and the coinsurance

Table 3-5. Number of Discharges from PPS-Excluded Hospitals and Distinct-Part Units

Type of Facility	1984	1985	1986	1987	Percent Change 1984-1987
Psychiatric					
Hospitals	59,660	63,800	72,625	80,480	35%
Units	61,890	92,800	120,190	137,775	123
Total	118,550	156,600	192,815	218,255	84
Rehabilitation					
Hospitals	23,595	21,300	29,800	33,255	41
Units	30,145	47,620	59,220	71,010	136
Total	53,741	68,920	89,020	104,265	94
Long-term	21,700	21,455	13,265	13,140	-39
Children's	1,375	1,790	2,275	2,140	56

SOURCE: J. C. Langenbrunner et al., "Developing Payment Refinements and Reforms Under Medicare for Excluded Hospitals," *Health Care Financing Review* 10(3): 942, Spring 1989.

Table 3-6. Trends in Medicare Beneficiary Skilled Nursing Facility Utilization

Year	Covered Days (In Thousands)	Percent Change	Patients Served* (In Thousands)	Percent Change	Days Per Patient Served	Percent Change
1980	8,645		257		33.64	
1981	8,518	-1.5%	251	-2.3%	33.94	0.9%
1982	8,814	3.5	252	0.4	34.98	3.1
1983	9,314	5.7	265	5.2	35.15	0.5
1984	9,644	3.5	299	12.8	32.25	- 8.2
1985	8,934	-7.4	314	5.0	28.45	-11.8
1986	8,156	-8.7	304	-3.2	26.83	- 5.7
1987	7,432	-8.9	293	-3.6	25.37	- 5.4
1988	11,478	54.4	350	19.5	32.79	29.2
1989	32,975	187.3	550	57.1	59.95	82.8

* These numbers are for fee-for-service only and may not include HMO enrollees.

SOURCE: Health Care Financing Administration, Office of the Actuary, 1990.

policy were reinstated. The number of days covered was also reduced to the previous level of 100 days per spell of illness. Consequently, a large decline in utilization is likely to occur in subsequent years. However, administrative changes implemented in 1988 may prevent utilization decreases as dramatic as the increases in 1989.

Besides increasing utilization, MCCA affected the number of nursing homes and nursing home beds that became Medicare-certified. Anticipating the effects of the legislation, nursing homes reportedly obtained Medicare certification, thereby increasing the supply of beds that could be used to provide Medicare-covered services.

Swing Beds

The Medicare swing bed program was designed to address the shortage of nursing home beds in rural areas and the low occupancy rates in rural hospitals. A swing bed hospital is a small rural hospital that can use its beds interchangeably to furnish either acute care services or SNF-type services to Medicare beneficiaries.

One of the assumptions of the program is that an unmet demand for long-term care exists in many rural communities, especially for post-acute care that requires more intense medical and skilled nursing services than provided in typical rural nursing homes. Another assumption is that surplus staff capacity is present in a number of under-occupied rural hospitals. Using the resources of rural hospitals for long-term care and post-acute care can help preserve small community hospitals, ensure availability of acute care and the diversity

of services, and maintain the economies of rural communities.¹

The program began in 1982; by 1988, more than 1,100 hospitals were participating in it. The average length of stay for swing bed patients is between 12 and 20 days. Compared with patients in nursing homes, the swing bed patients typically have more subacute problems and shorter lengths of stay.

Home Health Care

Home health care is another important Medicare benefit. To qualify for home health benefits, beneficiaries must be confined to their homes and need occasional skilled nursing care for an acute or post-acute condition. Covered home health services include part-time or intermittent nursing care; physical, occupational, and speech therapy; medical social services; part-time or intermittent services of a home health aide; medical supplies; and durable medical equipment. There is no time limitation or prior hospitalization requirement for home care. However, program guidelines generally limit part-time or intermittent nursing care to five days per week for two to three weeks. There is no deductible or coinsurance charge for this care, although services must be provided by a Medicare-certified home health agency.

According to HCFA, 1989 Medicare expenditures for home care totaled \$2.7 billion, an increase of 13.6 percent since 1988. The number of visits received by Medicare beneficiaries also increased to about 38.6 million in 1989 (see Table 3-7). Although the number of patients served increased between 1988 and 1989, the greatest number of

Table 3-7. Trends in Home Health Care Utilization

Year	Visits (In Thousands)	Percent Change	Patients Served* (In Thousands)	Percent Change	Visits Per Patient Served	Percent Change
1980	16,322		726		22.48	
1981	22,688	39.0%	948	30.6%	23.93	6.5%
1982	30,628	35.0	1,154	21.7	26.54	10.9
1983	36,898	20.5	1,318	14.2	28.00	5.5
1984	40,434	9.6	1,498	13.7	26.99	-3.6
1985	39,441	-2.5	1,549	3.4	25.46	-5.7
1986	37,985	-3.7	1,571	1.4	24.18	-5.0
1987	35,629	-6.2	1,544	-1.7	23.08	-4.5
1988	36,992	3.8	1,460	-5.4	25.33	9.7
1989	38,570	4.3	1,490	2.1	25.89	2.2

* These numbers are for fee-for-service only and may not include HMO enrollees.

SOURCE: Health Care Financing Administration, Office of the Actuary, 1990.

patients received home health services in 1986. Since then, utilization decreases resulted from increased denial rates for Medicare coverage. Improvements in the administrative process have led to greater utilization. In 1989, about 1.5 million patients were served, with an average of 25.9 visits per patient receiving home care. In 1989, approximately 5,700 Medicare-certified home health care agencies offered services, a decrease of about 4 percent since 1987.²

Hospice Care

Terminally ill Medicare beneficiaries whose life expectancy is six or fewer months are eligible to receive hospice benefits. Hospice care provided to dying persons and their families is supportive rather than cure-oriented. Once a beneficiary chooses to receive the hospice benefit, he or she must waive rights to all other Medicare benefits. Coverage is limited to 210 days. This day limit was removed by MCCA but subsequently reinstated upon its repeal.

Hospice benefits include nursing care, various therapies, medical social services, homemaker-home health aide services, medical supplies and appliances, physicians' services, short-term inpatient care, respite care, and patient counseling. There is a 5 percent coinsurance for each respite care day under the hospice benefit, as well as a \$5 coinsurance on drugs. Payments per patient, which are subject to a cap, were about \$9,000 in 1989.

In 1984, the year in which the benefit was added to Medicare, about 2,000 beneficiaries used hospice services. By 1987, this figure had soared to

more than 91,000. In addition, the number of providers increased threefold between 1984 and 1988, from 108 to over 440. Medicare-incurred expenditures for the hospice benefit totaled \$98 million in 1989, an increase of 40 percent compared with 1988.

CHANGES IN HOSPITAL SERVICES

Over time, hospitals change the mix of services they provide for a variety of reasons. Cost containment incentives of PPS were expected to encourage hospitals to add services that could substitute for inpatient care. These incentives were also expected to encourage hospitals to drop services that they could not provide cost-effectively. In fact, there were fears that PPS would slow the adoption and diffusion of services unacceptably. Conversely, the market pressures inherent in a competitive system, including the need to attract physicians and patients, may have compelled hospitals to expand services to increase market share and to add expensive, state of the art, technology-based services. This section examines changes in hospital services.

PPS and New Medical Technologies

The ability of hospitals to provide services based on medical advances depends on the development and diffusion of new technology. Since the beginning of PPS there have been concerns that financial incentives would inappropriately slow the adoption of new technology. Therefore, the Commission has examined the impact of PPS on the growth in the availability of important new technologies in hospitals.

To assess this impact, average annual growth rates in the proportion of hospitals offering certain high-technology services were calculated before and after the implementation of PPS. Services included computerized tomography (CT) scanners, MRIs, lithotripters, cardiac catheterization labs, cancer programs, neonatal intensive care units, and open-heart surgery (see table 3-8).

Table 3-8. Growth in Hospitals Offering Services, Pre-PPS and Post-PPS

Service	Average Annual Percent Change	
	Pre-PPS	Post-PPS
High-technology services		
CT scanners	5.8%	5.4%
MRIs	--	1.7
Lithotripters	--	1.5
Cardiac catheterization	0.3	1.3
Cancer programs	1.4	0.8
Neonatal intensive care	0.7	0.6
Open heart surgery	0.2	0.7
Alternative services		
PPS-excluded		
Psychiatric acute care beds	0.6	0.9
Rehabilitation beds	0.5	1.2
Other		
Organized outpatient department	1.5	6.2
Home care	1.1	5.2
Hospice care	--	0.2
Long-term care units	0.8	1.0
Long-term care beds	0.4	1.3

SOURCE: ProPAC analysis of American Hospital Association Annual Survey data.

These growth rates indicate that after PPS, the availability of these technologies continued to increase. For example, the proportion of hospitals with CT scanners grew at an annual rate of 5.8 percent from 1980 to 1983. Between 1983 and 1987, the proportion of hospitals with this equipment grew at a comparable rate of 5.4 percent annually. Most services show similar patterns.

Impact of New Technologies on Inpatient Hospital Costs—The diffusion of major new technologies, including those with large capital and operating costs, continued during 1988. The percentage of hospitals offering MRIs, CT scans, open-heart surgery, cardiac catheterization, organ transplant, and lithotripsy has continued to increase (see Table 3-9). The Commission's research on the cost of scientific and technological advancement shows that in any year the diffusion of new technologies has a small effect on Medicare costs.

ProPAC began documenting the estimated incremental Medicare inpatient operating costs of individual technologies for fiscal year 1988. The estimated cost in each year has consistently been a fraction of 1.0 percent of Medicare inpatient operating expenditures.

Cardiovascular and diagnostic imaging technologies in particular are expected to have the largest impact on hospitals' Medicare costs.³ The additional Medicare inpatient operating costs for these technologies increase when costs associated with new admissions and cost-decreasing applications are included. The total projected fiscal year 1991 costs are \$300 million for cardiovascular technologies and \$81 million for diagnostic imaging technologies.^{4,5} Even these estimates place the

Table 3-9. Community Hospitals Providing Selected Services (In Percent)

Year	MRI	CT Scan	Megavolt Radiation Therapy	Organ Transplant	Lithotripsy	Open Heart Surgery	Cardiac Catheterization
1980	--	22.6%	16.3%	--	--	10.7%	16.4%
1981	--	24.3	16.3	--	--	10.4	15.9
1982	--	31.3	16.7	4.0%	--	11.1	16.7
1983	--	39.3	16.5	4.3	--	11.4	17.1
1984	--	47.9	16.8	4.6	--	11.8	17.7
1985	--	55.5	17.2	4.9	--	12.2	18.4
1986	9.5%	60.3	17.5	5.4	3.2%	13.2	20.4
1987	9.3	60.4	17.7	5.8	3.7	14.2	22.0
1988	12.5	63.8	18.4	7.5	4.9	15.0	23.4

SOURCE: American Hospital Association, *Hospital Statistics*, 1981 through 1989 editions (Chicago, IL: AHA).

contribution of technology to increases in Medicare costs at a relatively low level.

The capital investment needed to acquire certain technologies was also examined. For example, acquiring an MRI can require investing over \$3 million. Establishing a lithotripsy service may require investing as much as \$2 million. Despite the substantial amount of money needed to acquire and operate these technologies, the number of hospitals offering them continues to increase. Further, the increase in the number of hospitals offering services requiring large investments (MRI, CT, and lithotripsy, for example) was greater in 1988 than in 1987.

International Comparisons—Technologies are also diffusing in other countries. One study looked at the level of diffusion of open-heart surgery, cardiac catheterization, organ transplant, radiation therapy, and MRI in the United States, Canada, and West Germany.⁶ The number of units of each technology per 1,000 population was greatest in the United States. Another study found that in May 1989, the number of lithotripsy units per 1,000 population in the U.S. was close to the number in Belgium, West Germany, Italy, and Spain.⁷ Wide variation in the number of lithotripters relative to the size of the population among several other European countries was also reported.

Alternative Types of Services

Many of the services based on the new technologies discussed above can be provided by hospitals on an outpatient basis. In fact, the share of hospital revenue generated by outpatient services has increased over the last decade (see Chapter 2). Also, the lack of payment constraints for these and other non-inpatient services has influenced the growth of services that can provide alternatives to inpatient care.

To document the growth of these alternative services, two types were examined (see Table 3-8). The first type were two inpatient services specifically excluded from PPS. This analysis confirmed what has been presented earlier, that is, the growth in the number of hospitals providing PPS-excluded services has increased in the post-PPS period.

Other alternatives to inpatient acute care were also studied. These services consisted of organized

outpatient departments, home care programs, hospice care, and long-term care units and beds. The proportion of hospitals providing these services also increased after the introduction of PPS. For example, in the period before PPS, the proportion of hospitals offering home care services grew by an average of 1.1 percent annually. After PPS, the growth rate increased to 5.2 percent.

AMBULATORY CARE SERVICES

Hospitals increased their ability to furnish ambulatory care after the introduction of PPS. For example, 41.1 percent of hospitals reported having an organized outpatient department in 1981. From 1981 to 1983, this proportion grew by 1.5 percent per year; in 1983, 44.4 percent of hospitals had this type of department. Between 1983 and 1987, however, the rate of growth increased to 6.2 percent per year so that in 1987, 69 percent of hospitals had an organized outpatient department.

Several factors have been crucial to the proliferation of non-inpatient sites of care. The development of technologies that allowed certain services to be provided without a hospital stay fostered the growth of some of these ambulatory services. The lack of payment constraints for many non-inpatient care services has also influenced the growth of alternative types of services. PPS and other third-party payment policies that have reduced inpatient care also stimulated the use of ambulatory care. In addition, changes in consumer demand and physician practice patterns contributed to shifts in sites of care. Hospitals, as well as other providers, encouraged by these factors, have initiated a variety of ambulatory care services. As a result, the supply of these services has grown rapidly.

Ambulatory Surgery Centers⁸

One important type of freestanding ambulatory facility is the ambulatory surgery center (ASC). Although most ambulatory surgery is performed in the hospital outpatient setting, 964 ASCs were operating in 1988, twice the number operating in 1985. Most of these centers are Medicare-certified. Advances in technology that encouraged the increased use of ASCs include less invasive alternatives to surgery, medications and drug therapies that improve recovery time and reduce risk of infection, and advances in anesthesia.

In 1988, Medicare-covered ambulatory surgical procedures increased to more than 1,500. Between 1987 and 1988, procedures performed at ASCs rose by 25 percent, and increased another 30 percent between 1988 and 1989. Ophthalmology, gynecology, and ear/nose/throat procedures are performed more often than other procedures at ASCs.

Other Types of Ambulatory Care Centers⁹

Many other types of ambulatory care centers are becoming widely available. Among them are emergency centers that provide 24-hour services, urgent care centers that provide episodic care for minor and urgent problems, and primary care centers that focus on the continuity of care. These centers are continuing to add new types of services such as occupational medicine and rehabilitation. Women's health centers offer any of 40 different types of services, the most common of which is mammography. Centers that serve specific illnesses and treatments, such as freestanding cancer, cardiac care, dialysis, and lithotripsy centers, are also growing rapidly.

Comprehensive outpatient rehabilitation facilities (CORFs) are Medicare-certified agencies that offer a wide variety of services. These include physician care, physical therapy, occupational therapy, speech pathology, respiratory therapy, prosthetic and orthotic services, nursing care, and social and psychological services. These services are comparable to inpatient services, yet they are provided in the outpatient setting. According to HCFA, there were 180 CORFs in operation in 1989, a threefold increase since 1984.

The substantial growth in diagnostic imaging centers since 1984 is most likely a response to third-party reimbursement for diagnostic imaging services and to rapid advances in imaging technologies. The most commonly performed procedures at these centers include X-ray, mammography, MRI, and CT scans. Even though most diagnostic imaging occurs in the hospital setting, it is estimated that by 1990 more than 12 percent will be done in freestanding facilities.

A portion of the growth in both the number and utilization of ambulatory sites of care may also relate to the rising number of physicians and group practices.¹⁰ In 1965 there were fewer than 300,000 physicians; by 1987 the number had grown to

almost 590,000, an increase of 97 percent. The number of physicians per 100,000 population increased nearly 64 percent between 1960 and 1987, from 146 to 240.

Further, the literature indicates that physician group practices are more likely to perform diagnostic procedures, particularly laboratory tests in the office, compared with solo practice physicians. Group practices can generate enough resources to purchase sophisticated equipment and have the patient volume to support it. Between 1975 and 1987, the number of medical group practices (defined as three or more physicians) more than doubled, from 8,483 to 17,496. About 30 percent of all non-Federal physicians practiced in groups during 1987.

BENEFICIARY ACCESS TO SERVICES

Access to hospital care for Medicare beneficiaries living in rural areas has caused considerable concern in recent years. These concerns stem from the large decreases in admissions to rural hospitals and the growth in the number of rural hospital closures. ProPAC has undertaken three different small-scale studies that begin to address, directly and indirectly, the availability of hospital services and their use by beneficiaries living in rural areas. It appears that beneficiary access to care has not been dramatically affected by PPS.

Changes in Inpatient Admissions

Admissions to rural hospitals have for many years declined much more rapidly than admissions to urban hospitals. The Commission undertook a study with the Codman Research Group to examine whether access to inpatient services for Medicare beneficiaries living in rural areas has been impaired.¹¹ Rather than analyzing the number of admissions to rural hospitals, the study dealt with rates of admissions for beneficiaries living in rural areas, regardless of where they were hospitalized. The states studied were Alabama, California, Illinois, Montana, and Texas.

For Medicare beneficiaries living in the rural areas of these states, the per capita admission rate was 22 percent higher than for those living in urban areas in 1984 and 17 percent higher in 1986. Admission rates were in fact highest for residents living in rural areas served by local hospitals with

fewer than 50 beds. Despite large declines in admissions to rural hospitals between 1984 and 1986, admission rates for Medicare beneficiaries residing in rural areas of all five states remained well above the rates for those living in urban areas.

In 1986 the admission rates for certain types of medical conditions where there was a weak consensus by physicians on the need for hospitalization were more than 25 percent higher for rural than for urban beneficiaries. These kinds of cases accounted for the largest proportion of admissions to small rural hospitals, perhaps because there are fewer alternate providers. Between 1984 and 1986, admissions for such cases declined by 25 percent for rural beneficiaries and 18 percent for urban beneficiaries.

Admission rates for other types of cases showed much less variation, however. For example, admissions for surgical procedures were only 2 percent higher for beneficiaries living in rural areas. Admission rates for rural beneficiaries fell slightly below those for urban beneficiaries only for technology-intensive cases involving, for example, chemotherapy or radiology therapy. This was also the only category of cases where admission rates increased between 1984 and 1986.

Services Provided by Hospitals Prior to Closure

To explore the types of services provided by hospitals that eventually closed, AHA Annual Survey data on the services that hospitals report they furnish were analyzed. For reference purposes, hospitals that closed were compared to open hospitals. This was accomplished by looking at the proportion of hospitals in both groups that offered certain services. Closed hospitals included all those that closed during the period 1985 through 1988. Because most closed hospitals had fewer than 200 beds, the open hospitals in the study were the same size. Two types of services were analyzed: high-technology services and those that could be considered alternatives to inpatient acute care.

While only a few services were considered, hospitals that eventually closed generally appeared to offer fewer services than hospitals that remained open (see Table 3-10). Moreover, fewer closed hospitals had offered these services early in the study period. A greater percentage of hospitals that

Table 3-10. Comparison of the Proportion of Hospitals Offering Selected Services: Open Hospitals Versus Hospitals That Closed in 1985 Through 1988

Service	Urban		Rural	
	Open	Closed	Open	Closed
High-technology services				
Diagnostic ultrasound facility				
1984	88.4%	69.6%	76.0%	41.5%
1985	91.0	65.5	79.7	58.1
1986	92.8	67.9	82.2	50.0
1987	91.9	92.9	79.3	38.9
CT scanning				
1984	44.5	23.2	22.2	7.7
1985	56.1	31.0	33.8	4.8
1986	63.6	28.6	41.1	9.4
1987	65.9	42.9	40.5	11.1
Diagnostic radioisotope				
1984	75.8	53.6	51.2	29.2
1985	75.3	51.7	51.9	25.8
1986	72.4	46.4	47.5	21.9
1987	70.4	71.4	44.2	27.8
Ambulatory surgery				
1984	96.6	82.6	88.1	66.2
1985	97.4	91.4	91.9	80.6
1986	97.5	92.9	92.3	84.4
1987	98.4	100.0	95.3	83.3
Alternative services				
Home care				
1984	17.0	17.4	18.5	7.7
1985	23.3	19.0	26.8	12.9
1986	28.8	10.7	35.2	12.5
1987	27.4	7.1	36.7	16.7
Hospice				
1984	7.7	0.0	7.2	3.1
1985	9.2	1.7	8.1	3.2
1986	12.0	7.1	10.9	3.1
1987	11.9	14.3	10.6	0.0
Rehabilitative outpatient services				
1984	28.4	23.2	18.4	4.6
1985	32.8	25.9	19.6	9.7
1986	34.0	25.0	20.4	12.5
1987	35.2	50.0	22.9	11.1
Organized outpatient department				
1984	46.0	47.8	33.2	29.2
1985	51.8	50.0	38.1	29.0
1986	63.6	57.1	52.0	40.6
1987	68.8	92.9	58.9	66.7
Hemodialysis				
1984	16.5	13.0	5.8	1.5
1985	20.3	10.3	6.2	0.0
1986	21.4	10.7	6.3	0.0
1987	17.6	0.0	6.5	0.0
SNF or long-term care unit				
1984	5.5	5.8	14.0	6.1
1985	5.4	5.2	14.0	9.7
1986	6.5	10.7	15.4	3.1
1987	7.2	7.1	15.5	5.6

Note: All hospitals had 200 beds or fewer.

SOURCE: ProPAC analysis of American Hospital Association Annual Survey data.

stayed open offered high-technology types of services. This was true for both urban and rural hospitals. The same conclusions can be drawn for the alternative services, although the differences between urban open and closed hospitals are not as large.

Medicare Expenditures and Other Facts About Counties with Closures

Hospital closures in 1985 and 1986 did not appear to have a dramatic impact on Medicare expenditures for beneficiaries. Between 1984 and 1987, the rate of increase in Medicare expenditures for beneficiaries residing in counties with hospital closures was only slightly lower than in counties with no closures (see Table 3-11). In rural areas, the average Part A expenditures per beneficiary in counties with closures were slightly less than the average expenditures in other rural counties in 1987. However, the amount of the difference in expenditures is very small (\$51). In urban areas, the average Part A expenditures in counties with closures were higher than in other urban counties.

In addition, beneficiaries living in rural areas where hospitals closed are no more likely to be poor or reside in an area with a physician shortage than beneficiaries in other rural areas. Further, hospital closure in a county did not seem to diminish the supply of medical doctors but did appear to coincide with a decline in the number of surgical specialists. The drop in surgical specialists did not, however, appear to affect spending for Part B services. Expenditures for Part B services did not increase at a faster rate in counties with closures.

Thus, Part B services did not appear to have substituted for Part A services in areas with hospital closures.

Other information is available for counties where the only hospital closed. Expenditures for beneficiaries residing in these counties were not lower than expenditures for other beneficiaries. Counties where the only hospital closed had lower per capita incomes than counties where no closure occurred and counties where a closure occurred but another hospital remained. These counties were also the least densely populated.

QUALITY OF CARE ISSUES

The Commission continues to be concerned about the quality of care furnished to Medicare beneficiaries. As a result, several specific studies were conducted to assess quality concerns. The first study examines hospital readmission and transfer patterns. This is followed by an examination of Medicare patient groups that may be susceptible if quality declines. A discussion of trends in concentration of specialized procedures follows. Finally, the use of post-acute care services during an episode of care for Medicare beneficiaries admitted for hip fracture and replacement is examined.

Readmissions and Transfers

It has been speculated that PPS incentives might lead to shifting expensive or complicated cases to other hospitals or to shortening care to the point where full patient recovery is jeopardized. Moreover, multiple admissions for certain types of cases

Table 3-11. Medicare Expenditures Per Beneficiary for Counties with and without Hospital Closures in 1985 and 1986

	Part A		Part B		Total Expenditures
	1987	Percent Change 1984-1987	1987	Percent Change 1984-1987	
Rural					
Closure	\$1,301	18%	\$758	52%	\$2,021
No closure	1,352	22	774	54	2,088
Urban					
Closure	1,600	18	910	37	2,340
No closure	1,411	21	849	47	2,213

Note: All data have been weighted by the number of enrollees in each county. Part A 1987 expenditures have been deflated by the HCFA wage index. Part B 1987 expenditures have been deflated by a prevailing charge index.

SOURCE: Area Resource File and American Hospital Association.

may indicate that the quality of patient care during the first admission has been compromised. These concerns have led ProPAC to study patterns of patient readmissions and transfers.

A readmitted patient is one who is hospitalized again within a certain number of days of discharge following a previous inpatient stay. Although individual readmissions may not be associated with poor quality care, a high readmission rate for certain types of cases might raise concerns. Interpreting this data is difficult, however, because hospital admission patterns may also reflect changing beneficiary demographics or medical practice patterns.

Patient transfers occur when a patient is discharged from one hospital and admitted to another hospital within one day. On one hand, transfers may indicate referrals to hospitals more able to provide appropriate treatment. On the other hand, they may also suggest inappropriate transfer of cases that are expected to be costly.

This section updates ProPAC's 1989 analysis of Medicare readmissions and transfers. The analysis examines changes in readmission and transfer rates between 1984 and 1988. It also examines changes in these rates by hospital location and size, and by beneficiary age. A new analysis compares payments and costs for these cases.

Readmission Rates—Readmission rates were examined over three different time intervals: seven days, 30 days, and 60 days. An initial admission is one that starts a new spell of illness. Using Medicare's spell of illness definition, initial admissions are those that occur after the beneficiary has been discharged from a hospital for at least 60 days.

For certain types of cases, readmissions occurring over short time intervals are possible indicators of poor patient outcomes. Similarly, large increases in readmission rates could indicate changes in the quality of care. From 1979 to 1983, 30-day readmission rates increased, on average, slightly more than 2 percent annually, and between 1984 and 1986, annual increases averaged 1.3 percent.¹² Since 1986, however, there has been a notable reversal of this trend (see Table 3-12). Between 1986 and 1988, 30-day readmission rates declined by an average annual rate of 1.8 percent. Readmission rates in 1988 are lower than the readmission rates observed in 1984. This general pattern also holds for seven-day and 60-day readmission rates.

Readmission rates also varied by urban and rural location and by hospital bed size (see Table 3-13). In 1984, 30-day readmission rates were 9.2 percent higher for rural than for urban hospitals. By 1988, however, the 30-day readmission rate to rural hospitals was actually 1.0 percent lower than the rate for urban facilities. A similar pattern is seen in the bed size groups. The change in readmission rates in rural hospitals probably reflects the decreased overall utilization of these hospitals. The net effect of these changes over time is that rural hospitals and the smallest urban hospitals had lower readmission rates in 1988 than they did in 1984. But urban hospitals with 100 or more beds had slightly higher readmission rates in 1988 than in 1984. In effect, differences in readmission rates that appeared to be related to hospital location and size in 1984 were not evident in 1988.

Readmission rates also vary by beneficiary age (see Table 3-14). Except for beneficiaries under 65 and those 95 or older, readmission rates appear to

Table 3-12. Medicare Readmission and Transfer Rates

Readmission/Transfer Rates	1984	1986	1988	Percent Change 1984-1988	Average Annual Percent Change	
					1984-1986	1986-1988
Readmissions within:						
7 days	415	419	398	-4.1%	0.5%	-2.5%
30 days	1,306	1,339	1,292	-1.1	1.3	-1.8
60 days	2,000	2,032	1,983	-0.9	0.8	-1.2
Transfers	192	202	240	25.0	2.6	9.0

Note: Readmission rates are per 10,000 initial admissions with live discharges. Transfer rates are per 10,000 admissions with live discharges.

SOURCE: ProPAC analysis of 1984, 1986, and 1988 MedPAR file data from the Health Care Financing Administration.

Table 3-13. Medicare 30-Day Readmission Rates, by Rural and Urban Location and Hospital Bed Size

Location and Bed Size	Number of Readmissions			Percent Change 1984-1988	Average Annual Percent Change	
	1984	1986	1988		1984-1986	1986-1988
All hospitals	1,306	1,339	1,292	-1.1%	1.3%	-1.8%
Rural	1,394	1,374	1,282	-8.0	-0.7	-3.4
<50 beds	1,480	1,381	1,296	-12.4	-3.4	-3.1
50-99 beds	1,415	1,402	1,294	-8.6	-0.5	-3.9
100-169 beds	1,354	1,357	1,274	-5.9	0.1	-3.1
170+ beds	1,323	1,353	1,266	-4.3	1.1	-3.3
Urban	1,277	1,328	1,295	1.4	2.0	-1.3
<100 beds	1,301	1,335	1,267	-2.6	1.3	-2.6
100-249 beds	1,292	1,339	1,301	0.7	1.8	-1.4
250-404 beds	1,274	1,329	1,297	1.8	2.1	-1.2
405-684 beds	1,269	1,318	1,299	2.4	1.9	-0.7
685+ beds	1,238	1,315	1,274	2.9	3.1	-1.6

Note: Readmission rates are per 10,000 initial admissions with live discharges.

SOURCE: ProPAC analysis of 1984, 1986, and 1988 MedPAR file data from the Health Care Financing Administration.

increase with age. Disabled beneficiaries (those under age 65) had the highest 30-day readmission rate in 1984, but the largest decline in readmissions between 1984 and 1988. Beneficiaries 90 and older were the only group to have higher readmission rates in 1988 than in 1984.

The reasons for the decline in readmissions are not known. Changing hospital treatment patterns may be reducing the likelihood that beneficiaries will be readmitted. Further, the decline in admissions to rural hospitals may have contributed to this trend. In addition, some cases that previously may have required readmission may now be admitted initially to referral hospitals for the complex

services they require. Finally, the availability of post-acute care services and alternative sites of care may allow patients to receive services in ambulatory settings when they would have been readmitted previously. This may result from medical advances and changing technologies. The Commission plans further examination of this change in readmission patterns, focusing on specific clinical scenarios.

Payments and Costs for Readmissions—This analysis examined 1988 Medicare payments and costs for the first and second admission in a 30-day readmission sequence. Beneficiaries who were re-admitted might be more costly than other patients

Table 3-14. Medicare 30-Day Readmission Rates by Beneficiary Age

Beneficiary Age	Number of Readmissions			Percent Change 1984-1988	Average Annual Percent Change	
	1984	1986	1988		1984-1986	1986-1988
Total	1,306	1,339	1,292	-1.1%	1.3%	-1.8%
<65	1,398	1,402	1,322	-5.4	0.1	-2.9
65-69	1,239	1,272	1,230	-0.7	1.3	-1.7
70-74	1,293	1,331	1,281	-0.9	1.5	-1.9
75-79	1,315	1,343	1,297	-1.4	1.1	-1.7
80-84	1,330	1,375	1,315	-1.1	1.7	-2.2
85-89	1,351	1,366	1,342	-0.7	0.6	-0.9
90-94	1,290	1,369	1,350	4.7	3.0	-0.7
95+	1,294	1,336	1,341	3.6	1.6	0.2

Note: Readmission rates are per 10,000 initial admissions with live discharges.

SOURCE: ProPAC analysis of 1984, 1986, and 1988 MedPAR file data from the Health Care Financing Administration.

since they might be sicker or require more resources. Alternatively, hospitals could encourage readmission of lower cost cases that could produce a profit for them. The findings indicate that, in a readmission sequence, the cost of treating Medicare beneficiaries during their first admission is slightly higher than the payment. Medicare costs and payments were roughly equal for the second admission or readmission. The slight underpayment for first admissions in a readmission sequence is of particular concern if certain hospitals have disproportionately higher readmission rates. This will be examined further in the coming year.

Transfer Rates—Patients are transferred from one hospital to another for a variety of reasons. Previous studies by ProPAC concluded that most transfers could probably be considered quality enhancing because patients are transferred to a more appropriate facility for care. For instance, many patients are transferred to receive high-technology types of care, such as coronary bypass operations and cardiac catheterization. Nevertheless, there is concern that some hospitals might be transferring very high-cost patients inappropriately. This analysis examined changes in the pattern of transfers between 1984 and 1988. It also assessed Medicare payments and costs for transfer cases in both transferring and receiving hospitals.

In 1988 there were approximately 230,000 Medicare transfer cases—40,000 more cases than

in 1984. This represents a 25 percent increase in the transfer rate over that period. Transfer rates have been growing by about 9 percent per year since 1985. The cause of this substantial increase is not completely understood and warrants further investigation.

Transfer rates varied tremendously depending on hospital location and size. Rural hospitals had the highest transfer rates and also the largest increase in transfer rates. Transfer rates grew the fastest for rural hospitals with 170 or more beds, 63.1 percent between 1984 and 1988 (see Table 3-15). By contrast, transfer rates for the under 50-bed rural hospitals increased 26.9 percent during the same period. Small rural hospitals, however, continue to have the highest transfer rates. Urban hospitals also experienced similar trends, although the largest urban hospitals, those with 685 or more beds, experienced a net decline in transfer rates between 1984 and 1988.

The likelihood of transferring a patient appears to be inversely related to age. The oldest beneficiaries, those 95 and over, have by far the lowest transfer rates of any age group (see Table 3-16). By contrast, beneficiaries 65 to 69 years old have transfer rates over three times higher than beneficiaries 95 and over. This disparity in the transfer rates between the youngest and oldest age groups grew between 1984 and 1988. The higher transfer rates for younger beneficiaries may be related to

Table 3-15. Medicare Transfer Rates, by Rural and Urban Location and Hospital Bed Size

Location and Bed Size	Number of Transfers			Percent Change 1984-1988	Average Annual Percent Change	
	1984	1986	1988		1984-1986	1986-1988
All Hospitals	192	202	240	25.0%	2.6%	9.0%
Rural	347	383	459	32.3	5.1	9.5
<50 beds	502	559	637	26.9	5.5	6.7
50-99 beds	415	458	544	31.1	5.1	9.0
100-169 beds	284	328	414	45.8	7.5	12.3
170+ beds	168	196	274	63.1	8.0	18.2
Urban	142	147	177	24.6	1.7	9.7
<100 beds	305	304	364	19.3	-0.2	9.4
100-249 beds	177	195	241	36.2	5.0	11.2
250-404 beds	121	129	161	33.1	3.3	11.7
405-684 beds	90	87	103	14.4	-1.7	8.8
685+ beds	84	75	82	-2.4	-5.5	4.6

Note: Transfer rates are per 10,000 admissions with live discharges.

SOURCE: ProPAC analysis of 1984, 1986, and 1988 MedPAR file data from the Health Care Financing Administration.

Table 3-16. Medicare Transfer Rates by Beneficiary Age

Beneficiary Age	Number of Transfers			Percent Change 1984-1988	Average Annual Percent Change	
	1984	1986	1988		1984-1986	1986-1988
Total	192	202	240	25.0%	2.6%	9.0%
< 65	214	224	259	21.0	2.3	7.5
65-69	225	248	299	32.9	5.0	9.8
70-74	214	235	283	32.2	4.8	9.7
75-79	190	201	244	28.4	2.9	10.2
80-84	157	154	183	16.6	-1.0	9.0
85-89	130	120	138	6.2	-3.9	7.2
90-94	113	89	109	-3.5	-11.3	10.7
95+	89	80	86	-3.4	-5.2	3.7

Note: Transfer rates are per 10,000 admissions with live discharges.

SOURCE: ProPAC analysis of 1984, 1986, and 1988 MedPAR file data from the Health Care Financing Administration.

differences in treatment patterns and the incidence of particular diseases among younger and older beneficiaries.

Payments and Costs for Transfers—The Commission has been concerned about whether hospitals are paid adequately for transfer cases, both in the transferring and in the receiving hospital. Per-case payments and costs were compared for both the transferring and receiving admission in a transfer sequence. Payments and costs were found to be roughly equal for the first admission, which is generally paid on a per diem basis up to the full DRG amount. However, costs were found to be significantly higher than payments for transfer cases in the receiving or second hospital.

As with readmissions, the payment shortfall is a concern if transfer cases make up a disproportionate percentage of cases in individual hospitals. Certain hospitals, particularly large teaching hospitals and urban hospitals with more than 400 beds, receive substantially more transfer cases than they transfer to other hospitals. In the average major teaching hospital, 4.5 percent of the cases it receives are transfers from other hospitals. This compares with an average of 1.5 percent for all hospitals. The majority of hospitals transfer more patients to other hospitals than they receive. Hospitals that receive a disproportionate number of transfer cases may be at a financial disadvantage as a result.

Payments and costs were examined for transfer cases in the 15 DRGs that account for about half of

all transfer cases. For three of these DRGs, payments for transfer cases exceeded costs by over 5 percent. In seven of the DRGs, costs exceeded payments by at least 5 percent. In four of the seven DRGs, costs exceeded payments by over 20 percent. This is more than four times the average difference between costs and payments for all cases (transfers and nontransfers) in these four DRGs. Transfer cases, however, were only a very small proportion of all admissions in these four DRGs. This might indicate that only the most complicated and resource intensive cases in these four DRGs tend to be transferred. ProPAC will investigate possible payment inequities for transfer cases during the coming year.

Monitoring Inpatient Utilization Trends of Selected Patient Groups

As the use of inpatient services changes, ProPAC monitors utilization and outcomes for groups of Medicare beneficiaries believed to be especially vulnerable to declines in the quality or quantity of inpatient care. These are patients for whom premature discharge, compromised care, or failure to admit could have particularly severe effects. Thirteen target groups have been identified on the basis of age, clinical condition, and income status (see Table 3-17). ProPAC's 1989 report, *Medicare Prospective Payment and the American Health Care System*, presented target group data for 1985 through 1987. The following incorporates 1988 data. It presents utilization and outcome trends for the target groups and compares their experience to Medicare admissions overall.

Table 3-17. Medicare Admissions, Length of Stay, and Mortality 30 Days Post-Admission for Selected Patient Groups

Patient Groups	Admission Rate			Length of Stay (Days)			30 Day Mortality Rate		
	1985	1988	Percent Change 1985-1988	1985	1988	Percent Change 1985-1988	1985	1988	Percent Change 1985-1988
Total Medicare	319	300	-6.0%	8.4	8.5	1.6%	6.9%	6.9%	0.0%
Patients age 80 and older									
Age 80-84	400	385	-3.8	9.0	9.1	1.2	8.8	8.9	1.1
Age 85-89	438	441	0.7	9.3	9.5	2.5	11.4	11.7	2.6
Age 90-94	460	469	2.0	9.4	9.6	2.7	14.7	15.0	2.0
Age ≥95	356	374	5.1	9.2	9.6	4.2	19.8	20.0	1.0
Diagnostic groups									
Diabetic peripheral vascular disease	35	36	4.0	16.3	16.3	0.0	7.6	7.9	3.9
Dementia, 1 ^a	156	102	-34.7	11.4	12.1	6.1	5.2	5.7	9.6 ^c
Dementia, 2 ^b	227	241	6.1	10.0	10.0	0.5	16.5	16.8	1.8
Congestive heart failure	293	302	2.9	8.2	8.1	-1.6	13.2	13.0	-1.5
Stroke	1,004	1,019	1.5	11.2	10.6	-5.6	21.4	20.0	-6.5 ^c
Pneumonia	1,189	1,333	12.1	9.2	9.1	-0.8	14.8	14.9	0.7
Hip fracture	532	551	3.6	14.8	13.6	-8.1	6.6	6.3	-4.5
Medicare-Medicaid buy-ins ^d									
Categorically needy	233	253	8.6	8.7	8.8	1.5	8.0	6.5	-18.8 ^c
Medically needy	357	420	17.6	9.5	10.0	4.8	10.9	11.3	3.7

Note: The admission rates are calculated per 1,000 enrollees for total Medicare; per 1,000 enrollees per age group for patients 80 and older; per 100,000 enrollees for diagnostic groups; and per 1,000 Medicare-Medicaid buy-ins.

^a Dementia 1: patients admitted because of dementia.

^b Dementia 2: patients with dementia, admitted because of hip fracture, stroke, or pneumonia.

^c Statistically significant at the $p < .05$ level.

^d Approximately 10 percent of buy-in admissions are excluded from this table due to unknown eligibility status.

SOURCE: ProPAC calculations based on MedPAR file data; Medicare and buy-in enrollment data from the Health Care Financing Administration, Bureau of Data Management and Strategy; and census data from the Bureau of the Census, Population Division.

Three variables are analyzed: admission rate, average length of stay, and 30-day post-admission mortality rate. Although these are not quality measures per se, they are some indication of beneficiary access and outcomes, and can highlight areas warranting further study.

Beneficiaries 80 and Older—Beneficiaries 80 and older were included in the study because advanced age is associated with a high incidence of functional limitations, chronic conditions, and relatively long recovery periods. The analysis divides the 80 and older beneficiaries into four age groups.

Except for a 4 percent decline in the admission rate for the 80- to 84-year-old group, the admission rate, average length of stay, and post-admission mortality rate increased slightly for all four groups from 1985 to 1988. The increase in mortality was

not statistically significant for any of the age groups. As might be expected, the admission rates, average lengths of stay, and mortality rates for all four 80 and older groups were higher than for all Medicare enrollees in both years.

Selected Disease Conditions—Seven disease conditions associated with above-average resource needs, debilitation, and chronic illness were also examined. These include peripheral vascular disease (PVD) due to diabetes, congestive heart failure, stroke, pneumonia, hip fracture, and two groups of dementia patients—those who are admitted because of dementia, and those who are admitted for other conditions but who also suffer from dementia.

Except for patients admitted for dementia, admission rates for the targeted diagnosis groups increased from 1985 to 1988. The average length

of stay fell for four diagnosis groups and rose substantially only for one. Falling length of stay could indicate an increase in premature discharges. However, for three of the four groups with shorter stays, the 30-day post-admission mortality rate also lowered. The most notable examples are stroke and hip fracture patients.

Analyses of 180-day mortality rates for hip fracture and stroke patients were also conducted. From 1985 to 1988, 180-day mortality rates for hip fracture patients fell from 16.9 percent to 14.8 percent, while mortality rates for stroke patients fell from 33.6 percent to 30.0 percent.

Of all the diagnosis groups, only patients admitted because of dementia appear to be cause for concern. From 1985 to 1988 the admission rate for this group declined nearly 35 percent. In addition, only the dementia group experienced an increase in length of stay and a significant increase in mortality. However, there are plausible explanations for the utilization and mortality trends that have little to do with changing quality of care. Dementia patients, for example, may be treated more frequently in outpatient and PPS-excluded psychiatric facilities, leading to fewer admissions and a mix of hospitalized patients that is more ill than in previous years.

Further analysis indicated that the severity of illness of hospitalized dementia patients increased over time. The percentage of dementia patients with secondary diagnoses known to be associated with high mortality increased from 49 percent in 1985 to 64 percent in 1988.¹³ Future analysis will attempt to establish conclusively how treatment patterns for dementia patients have changed.

Overall, the findings for the targeted diagnosis groups are reassuring. It does not appear that PPS has had gross adverse impacts on either access to care or quality of care for these patient groups.

Beneficiaries Covered by Both Medicare and Medicaid—Medicare beneficiaries who are covered by both Medicare and Medicaid were selected for study because of their low-income status. They are referred to as buy-ins because the state Medicaid program pays their Medicare Part B premium.

Most of this group are “categorically needy,” which means they are eligible for Medicaid because they qualify for supplementary income payments from the Federal government. The rest, termed “medically needy,” qualify for Medicaid because they have spent a large portion of their income on medical bills. The medically needy are likely to be nursing home patients.

Access to care for the categorically and medically needy beneficiaries appears to be improving over time. The admission rates for both groups rose substantially from 1985 to 1988, with 8.6 percent and 17.6 percent increases, respectively. Similarly, the average length of stay for these patients increased slightly. The categorically needy patients experienced a falling mortality rate, from 8.0 percent to 6.5 percent. The mortality rate for medically needy patients, however, has not changed appreciably.

Summary—Overall, the findings for the age, diagnosis, and buy-in groups are reassuring. Admission rates have increased for almost all categories, indicating that the target groups have continued access to inpatient care. In addition, length of stay has increased slightly for most groups, suggesting that premature discharge is probably not prevalent. Finally, mortality rates fell for several groups and increased significantly only for one. The target group analysis has not provided evidence that PPS has adversely affected quality of care.

Trends in Concentration of Specialized Procedures

PPS was expected to provide incentives for some hospitals to increase the numbers of certain types of cases while others would gradually stop treating these cases. Previous work completed by ProPAC and others has shown a relationship between the volume of specialized procedures performed in a hospital and patient outcomes. Hospital volume and costs are also related. For the specific procedures ProPAC has studied, mortality rates and costs tend to fall as the volume of procedures performed in a hospital increases.

ProPAC analyzed Medicare procedure volume, average standardized costs, and mortality rates for

five procedures: coronary artery bypass graft (CABG), transurethral prostatectomy (TURP), carotid endarterectomy, total hip replacement, and percutaneous transluminal coronary angioplasty (PTCA). These procedures are performed on a substantial number of Medicare beneficiaries each year. The analysis is limited, however, because it neither looks at physician volume of each procedure nor includes patients other than Medicare beneficiaries. In its March 1990 report, the Commission recommended that the Secretary begin to develop a database that would allow examination of the total volume of selected procedures. Such a database would include volume information for physicians and information on all patients, not just those covered by Medicare.

Trends in Medicare Rates and Hospital Caseloads—Between 1984 and 1988, the total number of procedures, the average number of procedures per hospital, and the number of hospitals performing the procedure increased for all the procedures studied except carotid endarterectomy. The largest increase in average hospital volume was for CABG, which rose 38 percent (see Table 3-18).

The number of CABGs and total hip replacements performed on Medicare beneficiaries increased substantially between 1984 and 1988. The number of PTCA cases increased 30.8 percent between 1987 and 1988, and the average hospital volume increased almost 23 percent. The growth rate for TURPs was much lower. The number of carotid endarterectomies actually decreased about 12 percent between 1984 and 1988, with the largest decrease occurring between 1986 and 1987. This decline may be related to recent research regarding the medical appropriateness and clinical benefit of the procedure in certain situations.

In 1988, TURPs and hip replacements were performed in 4,353 and 3,368 hospitals, respectively. By contrast, CABGs were performed at 793 hospitals and PTCA at 912 hospitals. Every year since 1984, the number of hospitals performing each procedure has increased somewhat. Overall, there is little evidence that specialized procedures are being performed at high volumes in a small number of facilities. In 1988, more than 75 percent of CABG procedures were performed in teaching and urban hospitals; 97 percent of PTCA procedures were performed in teaching and urban hospitals. The other procedures were performed in non-teaching hospitals more than 50 percent of the time and in urban hospitals more than 75 percent of the time.

Effects on Costs—In general, estimated standardized costs per case were lower in high-volume hospitals than in low-volume hospitals (see Table 3-19). The absolute dollar differences were greatest for CABG procedures. Hospitals performing 51 or fewer of these procedures had costs almost \$3,200 higher than hospitals in which at least 177 procedures were performed. This pattern of lower costs per case for hospitals with high volume was evident for all procedures except total hip replacement and carotid endarterectomies. For example, costs were lower in hospitals performing 11 to 18 carotid endarterectomies than in those performing 19 to 32 of these procedures.

Effects on Mortality/Morbidity—Using 30-day post-admission mortality rates as a measure, patient outcomes are better when high volumes of procedures are performed. The most dramatic difference in mortality rates was for CABG (6.8 percent versus 4.9 percent). The percentage of cases in which the patient had any one of four

Table 3-18. Number of Medicare Procedures and Average Number of Procedures Per Hospital

Type of Procedure	Total Number of Procedures			Percent Change 1984-1988	Average Number of Procedures Per Hospital		
	1984	1986	1988		1984	1986	1988
CABG	57,572	77,879	97,596	69.5%	89.1	110.9	123.1
TURP	199,519	218,778	227,105	13.8	49.7	50.8	52.2
Endarterectomy	52,885	51,861	46,636	-11.8	21.6	19.4	18.1
Hip replacement	52,628	64,806	77,628	47.5	17.8	20.2	23.0
PTCA	--	--	62,189	--	--	--	68.2

Note: Hospitals not performing a procedure are excluded from the analysis of that procedure.

SOURCE: ProPAC analysis of 1984, 1986, and 1988 MedPAR file data from the Health Care Financing Administration.

Table 3-19. Hospital Costs and Outcomes, by the Number of Procedures Performed

Quartile of Hospitals by Number of Procedures Performed	Number of Procedures Performed in Hospital	Total Number of Procedures by Quartile	Percent of All Cases	Average Standardized Costs	30-Day Post-Admission Mortality Rate
Coronary artery bypass surgery					
1st quartile	6 - 51	5,421	5.6%	\$18,300	6.8%
2nd quartile	52 - 98	13,875	14.2	17,750	6.4
3rd quartile	99 - 176	24,962	25.6	16,200	5.6
4th quartile	177 - 825	53,248	54.6	15,100	4.9
Transurethral prostatectomy					
1st quartile	6 - 19	11,402	5.1	3,200	1.4
2nd quartile	20 - 42	29,442	13.0	3,100	1.2
3rd quartile	43 - 80	58,975	26.1	3,000	1.1
4th quartile	81 - 553	125,943	55.8	2,900	1.0
Carotid endarterectomy					
1st quartile	6 - 10	3,620	8.1	5,450	2.0
2nd quartile	11 - 18	6,328	14.2	5,100	1.9
3rd quartile	19 - 32	9,992	22.5	5,200	2.1
4th quartile	33 - 217	24,538	55.2	5,100	1.7
Total hip replacement					
1st quartile	6 - 11	5,226	7.0	8,300	2.4
2nd quartile	12 - 20	9,092	12.1	8,200	2.2
3rd quartile	21 - 40	17,839	23.8	8,100	1.9
4th quartile	41 - 445	42,931	57.2	8,200	1.5
Percutaneous transluminal coronary angioplasty					
1st quartile	6 - 30	3,220	5.2	7,000	3.0
2nd quartile	31 - 62	8,730	14.1	6,450	2.4
3rd quartile	63 - 111	15,046	24.3	6,250	2.2
4th quartile	112 - 762	34,921	56.4	5,900	1.9

Note: Hospitals performing five or fewer procedures have been eliminated from the analysis of that procedure.

SOURCE: 1988 MedPAR file data from the Health Care Financing Administration.

comorbidities (cancer, chronic cardiovascular disease, chronic liver disease, and chronic renal disease) was also examined. This analysis enabled ProPAC to compare the comorbidity rates at hospitals with various procedure volumes. For all procedures studied except hip replacement, the percentage of patients with one or more of these comorbidities increased slightly with higher hospital volume. Lower mortality rates at high-volume hospitals are not, therefore, related to treating patients who are less ill.

Beneficiary Access to Procedures—Given that costs and mortality decline with higher hospital caseloads, it is important to examine the volume in the hospitals at which Medicare beneficiaries

receive care. The 25 percent of hospitals with the largest Medicare caseloads and lowest mortality rates provided more than 50 percent of all procedures studied. The procedure volume at hospitals in which beneficiaries received care varied widely by procedure in 1988. Of those beneficiaries receiving CABG, for instance, 10 percent had their procedure at a hospital where the Medicare caseload was 70 or less. By contrast, 10 percent of beneficiaries received carotid endarterectomies in a hospital with a Medicare caseload of nine or fewer. For all cases except PTCA, average procedure volumes in urban hospitals were slightly higher than the median, whereas average procedure volumes were substantially below the median for rural hospitals.

Episodes of Care for Hip Fracture Patients

DRGs with hip cases rank among the top 20 DRGs both in length of stay and in number of discharges. Between 1984 and 1988, more than 270,000 Medicare hospital admissions were attributed annually to hip fractures and hip procedures. The overall number of hip cases increased 6.5 percent during this period. This increase resulted from a substantial rise in the number of surgical cases and an actual decrease in the number of medical cases.

There was considerable variation in the length of stay among hip cases during the 1984 through 1988 period. Overall, however, the length of stay for these cases declined more rapidly than the length of stay for all Medicare cases. The length of stay for all hip cases declined 19 percent, although the rate of decline over these years has slowed. The number of hospitals where hip cases were discharged in seven or fewer days continued to increase.

Previous studies and consultation with clinical experts suggest that the method of fracture treatment significantly affects both inpatient patterns of care and length of stay. Limited research suggests that the use of post-acute care may also be affected by the method of fracture treatment. To examine these assumptions, "episodes of care" for hip fracture patients were studied.

Using ProPAC's Part A and B database network, a data file defining episodes of care for hip fracture patients was constructed to examine their patterns of post-acute service use.¹⁴ An episode of care was defined as the cluster of services provided to each hip fracture patient for 60 days before his or her inpatient stay, or "trigger event," through 90 days following discharge. The trigger events represented inpatient stays with admission and discharge dates during calendar year 1986. Any services for which claims or bills existed in the Parts A and B database network for that year were included in the episode of care.

A random sample of 8,636 hip fracture cases was selected from the database. It was subsequently divided into three treatment groups: those receiving a hip replacement, those undergoing hip

fracture reduction, and those who did not receive either procedure. In the sample, 32.6 percent received hip replacement, 57.7 percent underwent hip fracture reduction, and the remaining 9.7 percent received neither procedure. The initial work focused on hip replacement and hip fracture reduction cases.

Preliminary analysis found little difference in trigger event length of stay for either of the two major treatment groups. Average LOS for hip replacement and hip fracture reduction cases was 14.2 days and 14.0 days, respectively. This observation did not support earlier reports that found shorter average LOS for hip replacement cases.

General patterns of post-acute care service use also did not differ between the two groups. Only about 1.0 percent of hip replacement and hip fracture reduction cases did not use any Medicare-covered services in the 90-day period after the trigger event. About one-third of the cases in each group used services both before and after their inpatient stay, while the remaining two-thirds used services only after the event.

Although virtually all hip replacement and fracture reduction cases used some type of service following their trigger event, the pattern differed between these two groups. A significantly greater proportion of hip replacement cases used skilled nursing facilities or home health care compared with hip fracture reduction cases.

To explore this finding further, each of the two treatment groups was subdivided into two groups: those with a subsequent inpatient stay during the 90-day post-event period, and those with no subsequent stay. About 20 percent of cases in each of the treatment groups had a subsequent inpatient stay. For cases with no subsequent stay, home health care or skilled nursing facilities were used by a significantly greater proportion of hip replacement cases. However, for cases with a subsequent stay, there was no difference in post-acute care service use between the two treatment groups. These findings suggest that subsequent inpatient stays, rather than treatment group alone, are important factors that explain variation in post-acute care service use.

MEDICARE QUALITY ASSURANCE

Medicare has two principal quality assurance programs: Medicare conditions of participation (minimum health and safety standards for facilities) and Peer Review Organizations. State licensing agencies, private accreditation bodies, and facilities themselves also provide important quality assurance mechanisms.

Medicare's role in maintaining quality of care, particularly the PRO program, has been a subject of contention over the years. The controversy generally focuses on the methods that PROs use to detect and deter inappropriate or poor quality care, and their role in medical decisionmaking. Also, recent research has indicated that treatment decisions are often based on subjective considerations and that the effectiveness of many treatment options has never been evaluated. This prompted Congress to provide financing for effectiveness and outcomes research and to commission a study of ways to improve Medicare quality assurance efforts.

Peer Review Organizations

PROs monitor the utilization and quality of care provided to Medicare patients. The purpose of PRO review has remained relatively constant over time—to determine whether services provided to Medicare beneficiaries are necessary, are conducted in the most appropriate setting, and meet acceptable standards of medical care. The scope and emphasis of PRO review activities, however, have evolved significantly.

Originally, PROs focused primarily on retrospective utilization review of inpatient care. Today, PROs review samples of both inpatient services and ambulatory surgery procedures. In addition, HCFA recently initiated a pilot project of PRO review of care provided in physicians' offices. Although their review activities are still mostly retrospective, every PRO is now required to conduct prospective review of at least 10 elective surgical procedures.

While PROs initially focused primarily on utilization, recently the priority given to quality issues has increased. In 1986 hospital generic quality screens, used to detect common quality problems, were introduced. Later, quality screens were also developed for the outpatient setting. In addition, to

help PROs resolve quality-related problems in a more consistent fashion, a formal system for evaluation and determination of appropriate response and intervention was designed. Intervention may take the form of physician notification, education, and intensified review. Payment may also be denied.

Because a comprehensive evaluation of the PRO program has never been conducted, little is known about the impact of PROs on quality of care. Most evaluations of the PRO program have focused on narrow aspects of their operation like the value of readmission review, and on regional variation in PRO identification of quality problems. There is general agreement, however, that PROs would be more effective if they employed review criteria based on empirical evidence of the most appropriate and effective medical practices for a given set of patient characteristics.

Effectiveness and Outcomes Research

In 1988 HCFA, recognizing the need for more objective measures of quality, proposed an agenda of effectiveness and outcomes research. As an adjunct to the proposed research, HCFA developed a uniform clinical data set (UCDS). The UCDS contains detailed clinical information pertaining to entire episodes of care. When fully operational, it will allow development of a systematic quality of care screening process, and will facilitate evaluation of alternative medical practices.

The National Center for Health Services Research (NCHSR) also implemented a formal effectiveness research program in 1989 and distributed nearly \$6 million in grants for research on four conditions. In OBRA 1989, Congress abolished NCHSR and replaced it with a new agency, the Agency for Health Care Policy and Research (AHCPR). The primary functions of AHCPR are to support and coordinate research on outcomes and effectiveness, develop large databases similar to the UCDS, develop medical practice guidelines and review criteria, and disseminate findings. In creating the new agency, Congress shifted the locus of effectiveness and outcomes research from HCFA to the U.S. Public Health Service. The creation of the new agency represents new Federal efforts to promote quality of care. For the first time, significant funding (more than \$0.5 billion

has been authorized for the first five years) will be dedicated to systematic evaluation of alternative methods of treatment.

AHCPR has been charged with developing its first set of guidelines for three conditions by January 1991. Because the research to support the guideline development is still under way, these initial guidelines will be based on a combination of empirical evidence and the judgment of a panel of experts. The guidelines will be updated and refined as the research progresses.

A Strategy for Quality Assurance

In March 1990, the Institute of Medicine (IOM) published a Congressionally mandated report outlining a strategy for improving quality of care under Medicare.¹⁵ The report recommends establishing a Medicare Program to Assure Quality (MPAQ) and replacing PROs with Medicare Quality Review Organizations. The IOM also recommended the establishment of an advisory commission to oversee MPAQ activities, and a council within the Department of Health and Human Services to assist in implementation.

The study recognized that PROs provide a potentially valuable infrastructure for quality assurance. However, the study points out that the role of PROs is limited because they focus on utilization rather than quality. When PROs do address quality issues the study contends, they place too much emphasis on process and too little on outcomes. Another criticism is that PROs focus on substandard care, instead of recognizing and encouraging exemplary performance. At the same time, however, the study acknowledged that improving outcomes is difficult because systematic evaluation of alternative treatments has never been undertaken.

Under the IOM proposal, the emphasis of the new program would be entirely on quality. Only utilization review activities that directly bear upon quality would be carried out by the MPAQ. The goals of the proposed program are threefold: "continuously improving the quality of care for Medicare enrollees, strengthening the ability of health care organizations and practitioners to assess and improve their own performance, and identifying and overcoming systemic and policy barriers to good quality of care." The IOM defines quality of

care as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."

Under the IOM proposal, information supplied to providers on patterns of care and outcomes could thus be used to improve the quality of medical services. The process would be iterative, with new information being used to improve care in the future. The expected result could be ongoing improvement of medical care as a whole.

CONCLUSIONS

Changes in service utilization that were influenced by the introduction of PPS and more intensive utilization review are continuing, although perhaps at a slower pace. Admission rates for those under age 65 have declined throughout the last decade, but the rate of decline has slowed since 1987. Admission rates for those over 65, which fell in the first three years of PPS, have increased slowly in the past three years. Lengths of stay also declined sharply with the implementation of PPS but have stabilized during the last three years.

The availability of alternatives to inpatient hospital care continues to expand as indicated by growing numbers of ambulatory care providers and the volume of services they furnish. The factors that originally fueled this growth—including technological developments, payment incentives, changing practice patterns, and coverage decisions—have not diminished. Hospitals are providing these services as a strategy for coping with an increasingly competitive health care environment. The number of freestanding facilities offering these services is also growing.

Despite limited evidence, changes in the delivery of health care services do not appear to have affected access to inpatient care. There also seems to be little impact on the quality of care provided to those who are most vulnerable. It is interesting that readmission rates have decreased during the period 1986 to 1988 after increasing in previous years, while transfer rates have increased substantially. These trends require further investigation.

Just as the range of providers is widening, the United States is entering a new era of quality

assurance in medical care. The IOM proposals for improving quality assurance under Medicare, HCFA's effectiveness initiative, and the mandate of AHCPR all point to a future when physicians and government entities work together to improve

quality of care. By employing medical practice guidelines and review criteria that are based on empirical evidence, the quality of care for Medicare beneficiaries and others should improve.

Notes to Chapter 3

1. Peter W. Shaughnessy, Robert E. Schlenker, David F. Hittle, et al., *Hospital Swing Beds: A Study of Long-Term Care Provided in Acute Care Beds in Rural America, 1982-1986, Volume 1: Summary Report*, (Denver, CO: Center for Health Services Research, University of Colorado Health Sciences Center, May 1989).
2. *Monitoring Growth in Freestanding Ambulatory Centers and Assessing the Role of Technology in Ambulatory Services*, prepared by Project HOPE under ProPAC contract No. T-47540329, March 14, 1990.
3. *Estimating the Contribution of Scientific and Technological Advancement to Medicare Inpatient Hospital Costs for Fiscal Year 1991, Final Report*, prepared by Project HOPE under ProPAC contract No. T-47540329, January 22, 1990.
4. Cardiovascular technologies studied include atherectomy, electrophysiologic studies, implantable cardiac defibrillators, laser angioplasty, left ventricular assist devices, pacemakers, percutaneous transluminal angioplasty, percutaneous transluminal coronary angioplasty, and thrombolytic therapies. This total includes both the cost-increasing and cost-decreasing effects of these technologies. The total also includes the incremental costs in cases that would have been admitted even if these technologies were not available, as well as the costs for patients admitted to use these technologies.
5. Diagnostic imaging technologies include low osmolar and nonionic contrast agents, MRI, monoclonal antibody imaging agents, positron emission tomography, single photon emission computed tomography, and advances in ultrasound. This total reflects the additional costs in cases that would have been admitted even if these technologies were not available.
6. Dale Rublee, "DataWatch: Medical Technology in Canada, Germany, and the United States," *Health Affairs* 8(3):178-81, Fall 1989.
7. Bengt Jönsson, "What Can Americans Learn from Europeans?" *Health Care Financing Review*, 1989 Annual Supplement, 89-90.
8. Information for this section comes from *Monitoring Growth in Freestanding Ambulatory Surgery Centers*.
9. Ibid.
10. Data on physicians is taken from Pam Polister and Evelyn Cunico, eds., *Socio-Economic Factbook for Surgery 1989* (Chicago, IL: American College of Surgery, 1989).
11. *The Relationship Between Declining Use of Rural Hospitals and Access to Inpatient Services for Medicare Beneficiaries in Rural Areas*, prepared by Codman Research Group, Inc., ProPAC Technical Report E-90-01, January 1990.
12. U.S. Department of Health and Human Services, *Report to Congress: Impact of the Medicare Hospital Prospective Payment System, 1985 Annual Report*, HCFA Pub. No. 03251, (Baltimore, MD: HCFA, August 1987).
13. Ten high-risk diagnostic categories used by HCFA to predict mortality rates were also used for this analysis: cancer, stroke, severe acute heart disease, severe chronic heart disease, gastrointestinal catastrophes, metabolic and electrolyte disorders, pulmonary disease, renal disease, sepsis, and severe trauma.
14. The files comprising ProPAC's Database Network are: (1) Inpatient Stay File (long and short stays); (2) Home Health Agency Bill File; (3) Skilled Nursing Facility Stay File; (4) Outpatient Hospital Bill File; (5) BMAD Part B Claims File; (6) Provider Characteristics Files (hospital, skilled nursing facility, home health agency); and (7) Beneficiary Characteristics File.
15. Institute of Medicine, *Medicare: A Strategy for Quality Assurance* (Washington, DC: National Academy Press, 1990).

Chapter 4

Medicare Beneficiaries, Insurance Coverage, and Cost Containment

Medicare Beneficiaries, Insurance Coverage, and Cost Containment

This chapter covers a range of issues related to Medicare beneficiaries and their financial access to health care services through insurance coverage. After briefly describing the population served by the Medicare program, trend data on health care spending for the elderly and Medicare enrollment and costs are provided. Since many beneficiaries also obtain supplemental health insurance coverage either on their own or through their former employer, these types of policies and the characteristics of beneficiaries with this coverage are described. To complete the discussion of health insurance coverage, information on employer-sponsored health insurance is presented. The range of benefits and changes in benefits and premiums in these plans provide useful comparisons for the Medicare program.

The chapter continues with a discussion of the use of managed health care systems by both the Medicare program and private health insurance companies. Initiated as methods to control rising health care costs, managed care systems have become an increasingly common alternative to conventional plans. Finally, long-term care services are addressed because they represent major health costs that generally are not well covered by private health insurance.

The information presented in many sections of this chapter reflects the implementation and subsequent repeal of the Medicare Catastrophic Coverage Act of 1988. The Act was the most significant expansion of Medicare benefits since the Medicare program began in 1966. Inpatient hospital benefits were changed so that after one annual deductible, all other deductibles and all copayments were eliminated, along with day limits on inpatient hospital care. Skilled nursing facility and hospice care benefits were also expanded. These benefits went into effect on January 1, 1989. Additional benefits that were to be added later included an annual limit

on beneficiary copayments for Medicare-covered Part B services. In addition, a new prescription drug benefit was to be added. The Medicare benefits and associated administrative expenses were estimated to cost \$30.8 billion over the five-year implementation period.

MCCA was repealed in 1989, primarily in response to concern over the financing mechanism for these new benefits. For the first time, the full costs of new benefits were to be paid by beneficiaries, rather than primarily by the general working population. Further, supplemental premiums were to be based on a beneficiary's income tax liability. The legislation was intended to cover some of the gaps in current Medicare coverage. The cost of filling these gaps, however, generally was viewed as prohibitive. In addition, the legislation was criticized for failing to address one of the more compelling problems in health care for the elderly: the cost of long-term care. The history of MCCA illustrates the difficulty in trying to expand health insurance coverage in an era of increased cost consciousness.

The often competing concerns of maintaining financial access to health care, primarily through insurance coverage, and containing health care costs are discussed throughout this chapter. Information provided below on Medicare beneficiaries indicates that these competing concerns may become more important as the population continues to age.

CHARACTERISTICS OF THE AGED POPULATION

Health status and medical care utilization are related to age and socioeconomic characteristics. Demand for and use of services can be better understood in light of the current and future age structure of the population as well as other beneficiary characteristics. Further, beneficiaries vary in

their potential vulnerability to changes in Medicare benefits or coverage. This section briefly reviews the changing age structure of the elderly population, along with their financial and health status.

Demographic Characteristics

In 1970, less than 10 percent of the U.S. population was 65 or older. By 1980, this figure had risen to 11.3 percent; it is projected to increase to 13 percent by the year 2000. Further, within this age cohort, the segment of the very old is growing. In 1970, 31 percent of the population 65 years and older were in the 75 to 84 age group, and 7 percent were 85 or older. By 1980, 30 percent of the elderly were 75 to 84, with 8.8 percent 85 and older. By the year 2000, 34 percent of the elderly will be between 75 and 84; 13.2 percent will be 85 and older. This aging of the population is particularly important because the need for health care and social services increases with age.

Socioeconomic Characteristics

Family income may influence the amount, type, and distribution of health services used by Medicare beneficiaries. These factors must also be considered in evaluating the financial impact of out-of-pocket expenses beneficiaries incur in purchasing health care services and health insurance coverage.

The elderly, on average, have lower cash incomes than people under 65. There is, however, a smaller proportion of elderly families than nonelderly families in the lowest income category. In general, there appears to be better income protection for the

elderly poor than the nonelderly, primarily through Social Security.

The elderly are less likely to be categorized as poor than the nonelderly. The Bureau of the Census uses a lower income threshold for determining poverty among the elderly than for other age groups, however, so comparisons across age categories should be made cautiously. By contrast, a significantly larger proportion of the elderly are near the poverty line (see Table 4-1). There remains a large segment of the elderly population that could be financially vulnerable as a result of changes in health status or Medicare coverage.

Health Status

The health status of the elderly population can be evaluated through self-reported assessments and data on acute and chronic conditions. According to the 1988 National Health Interview Survey, more than 70 percent of the elderly reported their health as good, very good, or excellent (see Table 4-2). The rest reported fair or poor health. Self-reported health status was strongly related to income, with lower income respondents reporting poorer health status.

The incidence of acute health conditions is lower for the elderly than the nonelderly population. Acute conditions—influenza, pneumonia, fractures and sprains, and headaches, for example—are less than three months in duration. In 1988, the incidence of acute conditions for all ages was 175.3 per 100 persons. The incidence was 108.9 per 100 persons 65 and over. The elderly were more likely, however, to have restricted activity or bed-disability

Table 4-1. Elderly and Nonelderly Persons, by Ratio of Income to Poverty Threshold, 1987

Ratio of Income to Poverty Threshold	Number (In Thousands)		Percent	
	Under 65	65 and Over	Under 65	65 and Over
Below poverty threshold	29,055	3,491	13.7%	12.2%
100 to 124 percent of poverty threshold	8,701	2,288	4.1	8.0
125 to 149 percent of poverty threshold	8,869	2,065	4.2	7.2
Total below 150 percent of poverty threshold	46,625	7,844	22.0	27.4

SOURCE: U. S. Senate, Special Committee on Aging, *Aging America: Trends and Projections*, Serial No. 101-E (Washington, DC: U.S. Government Printing Office 1989) 28.

Table 4-2. Self-Assessed Health Status of the Elderly, by Family Income, 1988

Characteristic	All Persons ^b (In Thousands)	All Health Status ^c	Self-Assessed Health Status ^a				
			Excellent	Very Good	Good	Fair	Poor
All elderly ^d	28,683	100.0%	16.3%	21.5%	32.8%	19.9%	9.5%
Family income:							
Under \$10,000	6,157	100.0	11.7	17.2	31.1	25.0	15.0
\$10,000 to \$19,999	7,682	100.0	15.5	21.7	32.5	21.3	9.0
\$20,000 to \$34,999	5,193	100.0	18.2	23.5	34.9	17.0	6.4
\$35,000 and over	3,476	100.0	25.1	25.8	30.9	11.9	6.3

^a The categories related to this concept result from asking the respondent, "Would you say—health is excellent, very good, good, fair, or poor?" As such, it is based on the respondent's opinion and not directly on any clinical evidence.

^b Includes unknown health status.

^c Excludes unknown health status.

^d Includes unknown family income.

SOURCE: U.S. Department of Health and Human Services, National Center for Health Statistics, *Vital and Health Statistics: Current Estimates from the National Health Interview Survey, 1988* Series 10, No. 173, October 1989.

days (a subset of restricted activity days) associated with an acute condition. In 1988, all ages reported approximately 7 restricted activity days, of which 3.0 were bed-disability days. The elderly reported 8.2 restricted activity days per person, of which 3.4 were bed-disability days.

The prevalence of chronic conditions increases with age and is a major contributor to the need for medical services. More than four out of five elderly have at least one chronic condition; many have more than one. The leading chronic conditions for the elderly in 1988 were arthritis, high blood pressure, hearing impairments, and heart disease (see Table 4-3). The prevalence of most of

these chronic conditions is inversely related to income.

HEALTH CARE EXPENDITURES AND THE USE OF SERVICES

Health care spending for services provided to the elderly totaled about \$162 billion in 1987, or approximately 5.4 percent of the personal consumption component of the gross national product (GNP) (see Table 4-4). Per capita health expenditures for the aged exceeded \$5,360 in 1987, compared with \$1,856 per capita in 1977. Total spending for the aged in 1977 amounted to \$45.2 billion, or 3.6 percent of personal consumption

Table 4-3. Selected Chronic Conditions Per 1,000 Elderly Persons, by Age and Family Income, 1988

Chronic Condition	All Elderly	Age		Family Income			
		65-74	75 and Over	Less Than \$10,000	\$10,000 to \$19,999	\$20,000 to \$34,999	\$35,000 and Over
Arthritis	486	445	550	608	452	471	397
Cataracts	168	118	246	183	174	131	150
Hearing impairment	315	274	381	308	364	259	314
Deformity or orthopedic impairment	161	151	177	182	179	136	140
Hernia of abdominal cavity	58	54	64	72	67	46	51
Diabetes	92	95	88	98	101	76	71
Heart disease	296	272	334	346	324	269	257
High blood pressure	373	373	374	472	396	345	321
Emphysema	38	36	41	52	48	34	*

* Sample size is too small for reliable estimate.

SOURCE: U.S. Department of Health and Human Services, National Center for Health Statistics, *Vital and Health Statistics: Current Estimates from the National Health Interview Survey, 1988*, Series 10, No. 173, October 1989.

Table 4-4. Personal Health Care Expenditures for Persons 65 and Over, by Source of Funds and Type of Service, 1987 (In Billions)

Type of Service	All Sources	Private	Public		
			Total	Medicare	Medicaid
Personal health care	\$162.0	\$60.6	\$101.5	\$72.2	\$19.5
Hospital care	67.9	10.1	57.9	47.3	3.3
Physician services	33.5	11.9	21.6	20.3	0.5
Nursing home care	32.8	19.2	13.6	0.6	11.9
Other personal health care	27.8	19.5	8.3	4.1	3.7
Average annual rate of change, 1977-1987:					
Personal health care	13.6%	14.3%	13.2%	14.2%	10.8%
Hospital care	12.9	15.4	12.5	12.9	9.0
Physician services	15.7	14.0	16.7	17.3	5.2
Nursing home care	12.1	14.4	9.5	7.2	10.0
Other personal health care	15.3	14.1	18.7	21.2	18.1

Note: Public funds include programs not shown separately. Hospital care and physician services include both inpatient and outpatient care.

SOURCE: Daniel R. Waldo et al., "Health Expenditures by Age Group, 1977 and 1987," *Health Care Financing Review* 10(4):111-120, Summer 1989.

expenditures. From 1977 to 1987, medical spending for the aged increased at an annual rate of 13.6 percent, compared to 11.5 percent for all ages. About 66 percent of the annualized growth rate in expenditures over this period can be attributed to the higher costs of medical services. An increase in the number of persons 65 and older accounts for another 17 percent. The rest appears to be attributable to an increase in the number or complexity of services delivered.

Public funds accounted for a lower share of all health care expenditures for the elderly in 1987 than 10 years earlier. Medicaid contributions declined from 15.5 percent in 1977 to 12 percent in 1987. Medicare's share of expenditures for the elderly, however, was slightly higher in 1987 compared with 1977.

In 1987, hospital care accounted for almost 42 percent of health care expenditures for the elderly, while physician services accounted for only 20.7 percent. Nursing home expenditures accounted for another 20.2 percent. There were only relatively small shifts in the proportions of expenditures by type of service between 1977 and 1987.

Although the shares of expenditures by type of service were somewhat similar, the growth rates between 1977 and 1987 were much higher for certain services. During this period, for instance,

expenditures for all physician services increased at an annualized rate of 15.7 percent compared with 12.9 percent for hospital services. Moreover, after adjusting for inflation, the annual increase in payments for Medicare physician services was twice as high as the comparable increase in payments for Medicare hospital services.

The Medicare Program

Medicare eligibility for Hospital Insurance (HI or Part A) is based on age or disability status; people over 65 and entitled to cash benefits under Social Security are automatically eligible for HI. After a waiting period, so are those under 65 with a permanent disability. A small number of the elderly who are not eligible for HI may purchase coverage at the full actuarial cost. Supplementary Medical Insurance coverage (SMI or Part B) is a voluntary program for the elderly for which enrollees pay a monthly premium. People who have end-stage renal disease (chronic kidney failure) are eligible for Part A and Part B coverage.

Medicare-covered services under Part A include inpatient hospital, skilled nursing facility care, home health care, and hospice care. Medicare Part B covers a portion of the cost of physician services, medical supplies, outpatient hospital treatment, and other Part B services provided in other settings.

Enrollment—Total enrollment in the Medicare program for HI, SMI, or both was 33 million in 1988 (see Table 4-5). Slightly more than 90 percent of the beneficiaries are elderly; the rest are disabled. The disabled beneficiaries are younger and more likely to be male.

In 1988, enrollment in Part A was 32.4 million. Between 1980 and 1988, the enrollment in Part A increased about 1.8 percent per year. The Congressional Budget Office (CBO) estimates that Part A enrollment will increase to 35.9 million by 1995.

Enrollment in the Part B program is slightly less than enrollment in Part A—about 31.6 million. The Part B overall annual rate of increase in enrollment is equivalent to the increase in Part A enrollment. Part B enrollment is projected to increase to 35.4 million by 1995.

Utilization—After the implementation of PPS in 1984, utilization declined for inpatient hospital

services and increased for Part B services (see Table 4-6). Greater utilization of SMI services is partially due to more persons meeting the annual \$75 deductible under Part B, which has remained constant since 1982. The increase in SMI utilization was also engendered by a shift in service provision from inpatient to outpatient settings.

Overall use of Medicare Part A and B services generally increases as the beneficiary ages. Physician services were used more frequently and by greater numbers of elderly and disabled beneficiaries than any other services. Disabled beneficiaries were more likely to be hospitalized or have used outpatient services than other beneficiaries.

Medicare Payments—Total Part A and Part B payments in 1989 were \$99.9 billion, an increase of 54.2 percent over 1984 (see Table 4-7). After deflating for the rate of price increases for all goods and services, this was a 29.2 percent increase in real expenditures. The rate of increase in Medicare payments was slightly higher in 1989 compared with 1988. Partial implementation of the MCCA was responsible for the larger than normal increase in expenditures.

Between 1984 and 1989, Part A inpatient hospital payments increased 29.1 percent. In real terms, however, Medicare spending for inpatient hospital services has remained almost constant. Over time, inpatient hospital payments have accounted for a declining share of total Medicare spending. In 1989, Part A inpatient hospital payments accounted for 53.8 percent of total Medicare payments, compared with 64.2 percent in 1984.

The containment of Medicare inpatient hospital payments is attributable to several factors. The growth of per-case hospital payment rates has been restricted since the early years of PPS. In addition, the number of inpatient admissions declined significantly in the first few years of PPS.

Between 1984 and 1989, payments for Part B services increased about 92 percent. While there was relatively little real increase in inpatient hospital payments over these years, real Medicare spending for Part B services increased almost 10 percent per year. The continuing escalation in expenditures for Part B services led to the passage of legislation in 1989 to reform Medicare physician payment.

Table 4-5. 1988 Medicare Enrollment for the Elderly and Disabled, by Age, Sex, and Race (In Millions)

	HI and/or SMI	HI	SMI
Total	33.0	32.4	31.6
All aged	29.9	29.3	28.8
65-69	9.5	9.3	8.9
70-74	7.8	7.6	7.6
75-79	5.8	5.6	5.7
80-84	3.8	3.7	3.7
85+	3.1	3.1	2.9
Male	12.0	11.8	11.4
Female	17.9	17.5	17.4
White	26.1	25.7	25.2
Other	2.9	2.7	2.7
Unknown	0.9	0.9	0.9
All disabled	3.1	3.1	2.8
<35	4.7	4.7	4.3
35-44	5.7	5.7	5.2
45-54	6.7	6.7	6.1
55-59	5.4	5.4	5.0
60-64	8.4	8.4	7.8
Male	2.0	2.0	1.8
Female	1.1	1.1	1.0
White	2.4	2.4	2.2
Other	0.6	0.6	0.6
Unknown	0.1	0.1	0.0

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy.

Table 4-6. Aged and Disabled Persons Served

	1980	1981	1982	1983	1984	1985	1986	1987	Average Annual Percent Change 1980-1987
Total persons served	633.2	620.0	638.2	657.2	681.3	717.1	726.9	749.2	2.4%
Hospital insurance	240.6	244.2	251.4	251.6	239.9	211.0	211.0	211.5	-1.8
Inpatient hospital	237.1	238.2	243.5	242.3	229.0	207.6	203.2	202.3	-2.2
All elderly	237.1	237.3	242.7	241.5	228.5	206.4	201.6	201.1	-2.3
All disabled	243.3	246.4	250.1	249.8	233.7	218.7	217.9	213.7	-1.8
Skilled nursing facility	9.2	8.8	8.7	9.0	10.0	9.9	9.7	9.0	-0.3
All elderly	9.9	9.5	9.3	9.6	10.7	11.0	10.4	9.6	-0.4
All disabled	2.9	2.8	2.6	2.7	3.1	3.5	3.5	3.0	0.5
HHA	25.9	33.2	39.7	44.5	49.9	48.6	50.3	48.8	9.5
All elderly	26.9	34.4	41.1	46.0	51.6	52.3	52.0	50.6	9.4
All disabled	17.3	22.3	27.1	31.0	34.6	34.8	34.6	32.0	9.2
Supplementary medical insurance	650.5	668.1	653.5	672.1	697.5	709.1	748.9	777.3	2.6
Physician	629.9	647.7	696.1	653.1	674.8	686.9	725.9	757.4	2.7
All elderly	633.2	650.5	635.9	654.5	677.3	717.3	729.2	735.1	2.2
All disabled	599.9	622.4	617.8	638.9	649.3	679.6	692.4	712.2	2.5
Outpatient	275.1	288.9	297.3	313.7	332.2	352.4	399.6	427.8	6.5
All elderly	268.6	281.8	290.4	306.8	326.7	362.1	395.2	420.5	6.6
All disabled	334.4	353.4	362.9	381.6	387.9	409.4	444.1	474.1	5.1

Note: The rate of persons served is per 1,000 enrolled. All disabled includes beneficiaries with end-stage renal disease.

SOURCE: Health Care Financing Administration, Bureau of Data Management and Strategy.

Beneficiary Liabilities—Medicare beneficiaries share financial responsibility for Medicare-covered services through premiums, copayments, and physician unassigned charges in excess of the

Medicare allowed amounts (balance billing). These liabilities are not necessarily out-of-pocket expenses because many beneficiaries have supplemental insurance. In 1989, beneficiary liabilities were 22.2

Table 4-7. Estimated Medicare Benefit Payments, by Type of Service

Year	Part A		Part B		Part A		Part B		Total Medicare	
	Inpatient Hospital		Outpatient Hospital		Other Services ^a		Other Services ^b		Total Medicare	
	Payments (In Billions)	Percent Change	Payments (In Billions)	Percent Change	Payments (In Billions)	Percent Change	Payments (In Billions)	Percent Change	Payments (In Billions)	Percent Change
1980	\$24.2	—	\$2.0	—	\$1.2	—	\$ 9.0	—	\$36.4	—
1981	29.0	19.8%	2.4	19.9%	1.6	33.3%	10.7	18.5%	43.6	2.0%
1982	33.6	15.9	2.8	18.9	2.1	31.3	12.7	19.3	51.2	1.7
1983	37.4	11.2	3.3	16.7	2.5	19.0	14.9	17.4	58.1	1.3
1984	41.6	11.2	3.8	13.8	2.9	16.0	16.5	10.4	64.8	6.7
1985	44.1	6.0	4.4	16.2	3.1	6.9	18.4	11.5	70.0	8.2
1986	45.8	3.9	5.3	20.9	3.2	3.2	21.4	16.1	75.6	8.0
1987	47.3	3.1	6.2	18.3	3.3	3.1	24.8	16.2	81.3	7.5
1988	49.9	5.5	7.0	12.3	4.0	21.2	28.1	13.2	88.5	8.8
1989	53.8	7.8	7.9	12.9	7.0	75.0	31.1	10.7	99.9	11.4

Note: Payments reported here are incurred expenditures, rather than outlays.

^a Includes home health services, skilled nursing, hospice care, and ESRD.

^b Includes physician, suppliers, independent laboratory, home health services, and group prepayment practice.

SOURCE: Health Care Financing Administration, Office of the Actuary.

percent of Medicare expenditures, or 0.3 percentage points less than in 1988 (see Table 4-8). Beneficiary liabilities for inpatient care were 5.9 percent in 1989, or 3 percentage points less than in 1988. This reduction in beneficiary liabilities is a result of the MCCA provision that eliminated inpatient hospital coinsurance. Beneficiary liabilities should increase to previous levels because of the repeal of the legislation.

Beneficiary liabilities for other Medicare services totaled \$25.1 billion in 1989, almost all of which was paid by beneficiaries through Medicare premiums, copayments, and balance billing. The beneficiary share of total expenditures for other Medicare services was slightly higher in 1989 compared with 1988, but lower than in the previous seven years. Beneficiary liabilities for Part B services will be reduced by the implementation of physician payment reform, which will impose limits on balance billing amounts.

The Medicare inpatient hospital deductible accounted for 12.4 percent of total beneficiary liabilities in 1989. Historically, this deductible has been based on the average cost of a hospital day. Declining hospital inpatient length of stay since the introduction of PPS led to a significant increase in the average cost per day and, therefore, the inpatient hospital deductible. Starting in 1988, however, increases in the inpatient hospital deductible were tied to the PPS update factor, adjusted for real changes in case mix. This has significantly reduced the rate of increase. Because of MCCA and

the change in the method for updating the inpatient hospital deductible, total beneficiary liabilities for the Medicare inpatient hospital deductible declined 17.3 percent between 1987 and 1988.

The inpatient hospital deductible increased 5.7 percent to \$592 in 1990. Because the MCCA was repealed, beneficiaries in 1990 will have to pay the inpatient deductible each time they enter the hospital under a new spell of illness. Moreover, beneficiaries will again have to pay coinsurance after 60 days of inpatient hospital care during a spell of illness.

In 1989, the Medicare Part B annual premium accounted for 44.4 percent of beneficiary liabilities, compared with 34 percent in 1988. However, the 1989 Part B premium, which was \$383, included a \$48 premium for MCCA. In 1990 the premium is \$343.

Medicare Projected Outlays—CBO annually calculates projected Federal outlays from the Hospital Insurance and Supplementary Medical Insurance Trust Funds. The baseline is a projection of outlays expected under a Federal program's current law and policy. Baseline projections, which usually extend over a five-year period, are sensitive to the economic and technical assumptions from which they are derived. The Medicare baseline projections do not include estimates of deductibles and copayments paid by Medicare beneficiaries. Savings from the Administration's proposed budget and legislative proposals are calculated as the

Table 4-8. Estimated Beneficiary Liabilities as a Percentage of Medicare Expenditures

Year	Total Medicare			Inpatient Hospital		Other Medicare	
	Beneficiary Liability (In Billions)*	Percent Change	Beneficiary Share of Total Expenditures	Beneficiary Liability (In Billions)*	Beneficiary Share	Beneficiary Liability (In Billions)*	Beneficiary Share
1980	\$10.2		21.9%	\$1.7	6.6%	\$ 8.4	40.6%
1981	12.1	19.7%	21.7	2.0	6.5	10.1	40.7
1982	14.1	18.4	21.6	2.7	7.4	11.5	40.0
1983	16.3	13.8	21.9	3.1	7.6	13.1	38.6
1984	18.0	10.6	21.7	3.3	7.3	14.7	38.8
1985	18.8	7.1	21.1	3.4	7.2	15.4	37.3
1986	20.8	8.9	21.6	4.2	8.4	16.7	35.9
1987	23.6	8.5	22.4	4.6	8.8	19.0	36.0
1988	25.9	8.5	22.5	4.9	8.9	21.0	34.9
1989	28.6	10.4	22.2	3.4	5.9	25.1	35.2

* Medicare Part B premiums are included in total Medicare beneficiary liabilities.

SOURCE: Health Care Financing Administration, Office of the Actuary, Office of National Cost Estimates.

projected reduction in outlays resulting from a change in the program compared with the baseline projection.

Total Medicare outlays are projected to increase by \$10.6 billion, or 11 percent, in fiscal year 1990 and \$9.6 billion, or 9 percent, in fiscal year 1991 (see Table 4-9). In the last part of fiscal year 1990, payments will be made more rapidly than in the past. This will shift \$1.5 billion in outlays that would otherwise have occurred in fiscal year 1991 into fiscal year 1990, thereby lowering the 1991 growth rate while raising the 1990 and 1992 rates. In addition, 1989 and 1990 spending from the MCCA also affects the 1990 growth rates.

Total Part A outlays are projected to increase 9.7 percent in fiscal year 1990. On average, the projected increase is 9.4 percent for fiscal years 1990 through 1995. Medicare inpatient hospital outlays—the largest portion of Part A outlays—are projected to increase an average of 9.9 percent between fiscal years 1990 and 1995.

For Part B, the projected increase is 13.2 percent in fiscal year 1990. For fiscal years 1990 to 1995, the average yearly increase is projected to be 14 percent. Payments to physicians are the driving force behind the projected Part B spending increases because they are such a large proportion of the total. Medicare payments for hospital outpatient services, independent laboratories, and group practice plans, however, are expected to increase at a more rapid rate than payments for physician services between fiscal years 1990 and 1995.

In response to the projected increase in Medicare spending, the Administration's 1991 budget includes major proposals affecting both Parts A and B. These proposals were estimated by CBO to save \$5.1 billion in fiscal year 1991 and a total of \$47.5 billion in fiscal years 1991 to 1995. Approximately 44 percent of the proposed budget savings would affect Part A payments, about 37 percent would affect Part B payments, and the rest would be from changes in the Part A and Part B premiums.

Proposed changes to Part A would save \$3 billion from the projected increase in fiscal year 1991 and \$20.7 billion in fiscal years 1990 through 1995. For fiscal year 1991, these changes include: (1) maintaining capital payments at 85 percent for rural hospitals and reducing capital payments to 75 percent for urban hospitals for \$1.3 billion in savings; (2) reducing the indirect medical education adjustment to 4.05 percent for \$1.5 billion in savings; and (3) limiting the update of the PPS rates to 1.5 percent below the PPS market basket for \$0.6 billion in savings.

Proposed changes to Part B would save \$2.1 billion in fiscal year 1991 and a total of \$18.2 billion in fiscal years 1991 through 1995. The changes include reducing payments for overpriced procedures and in overpriced localities, fees for radiologists and anesthesiologists, and outpatient hospital capital payments and outpatient payments. In addition, changes would be made in payments for durable medical equipment, oxygen, and assistants at surgery. Global fees for surgery also would be changed.

Table 4-9. Medicare Baseline Estimates (In Billions)

	1989	1990	1991	1992	1993	1994	1995
Hospital Insurance (Part A)	\$58.2	\$63.9	\$67.5	\$75.5	\$83.2	\$91.4	\$100.0
Yearly increase		9.7%	5.7%	11.9%	10.2%	9.9%	9.4%
Supplementary Medical Insurance (Part B)	38.3	43.4	49.3	57.1	65.2	74.1	83.7
Yearly increase		13.2%	13.8%	15.7%	14.2%	13.6%	13.0%
Total Medicare outlays	96.6	107.2	116.8	132.6	148.4	165.5	183.7
Premium collections (Part B)	11.6	11.6	11.9	12.6	13.3	14.1	14.9
Net Medicare outlays	84.9	95.6	104.9	120.0	135.0	151.4	168.8
Yearly increase		12.6%	9.7%	14.4%	12.5%	12.1%	11.5%

SOURCE: Congressional Budget Office estimates as of March 1990.

SUPPLEMENTAL INSURANCE

Almost all the elderly receive health insurance coverage through the Medicare program. As noted above, beneficiaries are liable for copayments, deductibles, and physician unassigned charges for Medicare services. Many beneficiaries have supplemental insurance to cover these costs.

Supplemental insurance is any private health insurance policy a beneficiary may own. This includes private medigap policies purchased through a commercial insurer or Blue Cross/Blue Shield, post-retirement health benefits (PRHBs) offered through a former employer, or comprehensive employer-sponsored policies for the aged who are working.

Supplemental policies available for Medicare beneficiaries usually provide reimbursement only for Medicare-covered services. Further, reimbursement generally is determined in accordance with Medicare policies. As a result, these policies may not ensure against several of the most important gaps in Medicare coverage. For example, most policies do not cover nursing home stays that fail to meet Medicare requirements, the full price of unassigned physician services, physical examinations, routine dental care, vision care and eyeglasses, and hearing aids. While some policies provide additional benefits, such as a portion of the physician's balance bill and prescription drugs, most of the plans sold by the two largest medigap insurers do not.¹

Beneficiary Coverage

About 68 percent of beneficiaries had private supplemental insurance, according to data from the March 1988 Current Population Survey tabulated by CBO. Another 10 percent were covered under Medicaid and other public programs. Therefore, nearly 7 million beneficiaries (or 23 percent) had no supplemental insurance protection. Three percent of beneficiaries under 65 were without supplemental insurance, while 20 percent of beneficiaries 65 and older did not have additional protection.

Data from the National Medical Expenditure Survey, Round 1, indicate that the proportion of Medicare beneficiaries without private insurance has declined since 1977, when approximately 32 percent lacked private supplemental coverage. By 1983, just under 30 percent of beneficiaries lacked such coverage, compared with almost 25 percent in the first quarter of 1987 (see Table 4-10).² Older Medicare beneficiaries are less likely to have supplemental coverage. In 1987, 28.5 percent of those 75 or older lacked private coverage. In addition, older beneficiaries are less likely to have employment-related coverage. For instance, in 1987 25.2 percent of those 75 or older had such coverage compared with 44.2 percent of those 65 to 69 years of age.

According to the Health Insurance Association of America 1989 survey, 15 percent of Medicare beneficiaries had two or more supplemental policies. Beneficiaries over age 80, those with higher

Table 4-10. Private Health Insurance Coverage for Medicare Population Age 65 and Over

Population Characteristics	Age 65+ (In Thousands)	Percent Distribution					
		Employment-Related Coverage				Other Private Coverage	No Private Coverage
		Retiree	Dependent of Retiree	Active Worker	Dependent of Worker		
Total	27,149	20.6%	10.5%	2.4%	1.3%	40.6%	24.6%
Age							
65-69	8,905	23.2	12.6	5.8	2.6	33.0	22.7
70-74	7,405	23.8	11.9	1.1	0.8	41.3	21.1
75+	10,839	16.3	7.8	0.5*	0.6	46.3	28.5
Current Status							
Employed	3,158	14.5	5.4	20.9	1.5*	40.8	16.8
Not employed	23,991	21.4	11.2	—	1.3	40.6	25.6

* Relative standard error greater than 30 percent.

SOURCE: A. Monheit and C. Schur, "Health Insurance Coverage of Retired Persons," *National Medical Expenditure Survey Research Findings 2*, DHHS Pub. No. (PHS) 89-3444, National Center for Health Services Research and Health Care Technology Assessment (Rockville, MD: NCHSR, September 1989).

incomes, and those with higher levels of education were more likely to have additional policies. This survey also found that 90 percent of beneficiaries with supplemental policies had medigap-type policies; 8 percent had hospital indemnity, 1.0 percent had long-term care, and 1.0 percent had specified disease policies.³

Payments

In 1989, medigap policies paid roughly \$8.3 billion in benefits—a 5 percent decrease from 1988. The decrease in payments, partially attributable to MCCA, would be even larger if the estimates had been adjusted for inflation.⁴ With the repeal of catastrophic benefits, these policies will likely pay more in benefits.

Premiums

Medigap premium rates increased only 8 percent in 1989, according to a survey conducted by the Blue Cross/Blue Shield Association. However, the median non-group policy rates are expected to increase about 29 percent in 1990. The association indicates that, if MCCA had not been repealed, the 1990 increase would have been about 9 percent.

As medigap premiums rise, there is increased interest in the proportion of premiums paid out in benefits, termed the loss ratio. The Baucus Amendment (Section 1882 of Title XVIII of the Social Security Act) established target loss ratios of 60 percent for individual policies and 75 percent for group policies. The National Association of Insurance Commissioners (NAIC) uses a two-tier test to determine compliance with the loss ratio target. Policies in effect for three years or more should meet the target, while those in effect for fewer than three years should meet or exceed the target in the third year.

A General Accounting Office survey of 29 commercial insurers found that nearly 34 percent of individual plans and 66 percent of group plans that were in effect for three years or more did not meet the minimum standard. However, most Blue Cross/Blue Shield plans exceeded the target. Of newer policies, sixty percent of individual and 70 percent of group policies failed to meet the target. As a result, questions are being raised about the need for the premium increases, particularly when some

plans are spending less than half of the premiums in benefits.

Effects of MCCA

Because MCCA substantially expanded Medicare coverage, it also required the organizations that sold supplemental coverage either to provide additional benefits to Medicare beneficiaries equal in value to the benefits that were duplicated in the legislation or refund an amount equal to the actuarial value of the duplicated benefits. With the repeal of MCCA, the NAIC was required to revise its standards to reflect the benefit changes. The NAIC's new standards have expanded the required benefits offered by medigap policies. Nevertheless, many beneficiaries, even with supplemental policies, remain unprotected from catastrophic losses.

Post-Retirement Health Benefits for Retirees: Employer-Based Policies

PRHBs, a type of supplemental policy, are provided to retirees (generally 55 and over) and usually to their dependents through an employer's group health plan. Employer-provided coverage is an earned benefit and is tax-free. A PRHB plan is usually less expensive than an individual policy a retiree could purchase due to differences associated with administrative and marketing costs and group coverage. PRHBs are usually the main source of health insurance for retirees under 65. Eligibility for PRHBs varies with age and length of service with an employer. For many, it is similar to eligibility for early retirement. Employers often require 15 years of service as well as attainment of a specific age, usually 55 to 60.

Coverage—Almost 71 percent of retirees aged 55 to 59 had employment-related coverage in 1987 (see Table 4-11). Employment-related coverage is inversely related to age. More than 51 percent of retirees 65 to 69 and nearly 45 percent of those 70 to 74 had the employment-related coverage, but only 33 percent of those 75 and over had such coverage.

Nearly 51 percent of white retirees were covered under an employment-related plan (policyholder or dependent) compared with 36 percent of black and 26 percent of Hispanic retirees. More than 50 percent of black and Hispanic retirees lacked employment-related or other private coverage, compared with 15 percent of white retirees.

Table 4-11. Health Insurance Coverage of Retired Persons, 1987

	Retirees 55 + (In Thousands)	Percent Distribution			
		Employment-Related Coverage		Other Private Coverage	No Private Coverage
		Policyholder	Dependent		
Total	22,042	38.8%	9.9%	32.1%	19.1%
Age					
55-59	1,723	50.1	20.6	11.2	18.1
60-64	3,818	51.9	15.0	17.5	15.6
65-69	5,230	40.3	11.1	29.7	19.0
70-74	4,848	37.1	7.6	38.7	16.6
75+	6,424	28.1	4.9	43.5	23.6

SOURCE: A. Monheit and C. Schur, "Health Insurance Coverage of Retired Persons," *National Medical Expenditure Survey Research Findings 2*, DHHS Pub. No. (PHS) 89-3444, National Center for Health Services Research and Health Care Technology Assessment (Rockville, MD: NCHSR, September 1989).

Certain industries are more likely to provide health insurance (see Table 4-12). The employer size, use of skilled personnel and nonseasonal workers, and union representation appear to play a role. Persons retiring from manufacturing, transportation, communication, utilities, or public administration were most likely to have employment-related health coverage.

The 1988 Foster Higgins Health Care Benefits Survey found that 43 percent of employers providing PRHBs for retirees over 65 offered a Medicare

carve-out plan; that is, the plan's benefits are determined, then reduced by Medicare payment. In 1987, 35 percent of employers offered Medicare carve-out plans. About 33 percent of employers coordinated benefits with Medicare in 1988. This policy allows retirees to receive coverage for up to 100 percent of health care expenses from a combination of Medicare and the employer's plan. Finally, employers offering a Medicare supplemental plan, which may provide benefits in addition to Medicare, dropped from 28 percent in 1987 to 24 percent in 1988.

Table 4-12. Employment Status of Retired Persons and Private Health Insurance Coverage, 1987

Population Characteristic	Retirees 55 + (In Thousands)	Percent Distribution			
		Employment-Related Coverage		Other Private Coverage Only	No Private Coverage
		Policyholder	Dependent		
Total	22,042	38.8%	9.9%	32.1%	19.1%
Former industry of employment					
Agriculture	505	8.2	7.5*	51.6	32.7
Construction	1,169	33.2	5.9	37.0	23.9
Manufacturing	5,429	47.7	7.5	27.5	17.4
Transportation, communications, utilities	1,922	58.9	5.2	22.7	13.2
Sales	3,297	18.9	12.7	47.2	21.3
Financial services	828	34.3	14.5	29.5	21.7
Repair services	727	23.9	16.0	34.7	25.4
Personal services	797	9.0	11.5	44.1	35.4
Professional services	3,686	38.3	13.1	32.1	16.5
Public administration	1,989	59.2	6.2	18.5	16.2

* Relative standard error greater than 30 percent.

SOURCE: A. Monheit and C. Schur, "Health Insurance Coverage of Retired Persons," *National Medical Expenditure Survey Research Findings 2*, DHHS Pub. No. (PHS) 89-3444, National Center for Health Services Research and Health Care Technology Assessment (Rockville, MD: NCHSR, September 1989).

Premiums—According to the 1988 CPS, 29 percent of Medicare beneficiaries had employment-based supplemental insurance. Eleven percent of these beneficiaries were in plans for which the employer paid the entire premium; for 12 percent, the employer paid part of the premium; and for 6 percent, the beneficiary paid the entire premium.

Costs—In 1988, PRHBs paid an estimated \$20 billion in benefits. The average cost per retiree under 65 was \$2,397; for those over 65, it was \$1,372. Total health plan costs for employers offering PRHBs increased with the proportion of retirees in the plan. If 30 percent or more of the plan participants were retired, the average cost per employee was \$3,209. If less than 10 percent of the plan participants were retired, the average cost per employee was \$2,211.⁵

Some employers providing PRHBs are increasing the level of retiree contribution. Of employers surveyed by Foster Higgins, 21 percent have increased the level of contribution in the last two years or plan to do so in 1990. Furthermore, 12 percent of employers had decreased benefits in the last two years.

Potential Threats to PRHBs—PRHBs are an important benefit for retirees. They are often the only source of health insurance coverage for those between 55 and 64 years old. However, the viability of PRHBs is affected by several factors. Today, the cost of retiree health coverage accounts for an average 14 percent of total health plan costs. In certain industries, however, retiree health costs account for a much larger share. Some 69 percent of mining and construction employers and 53 percent of utilities employers report spending more than 20 percent of their total health plan costs on retirees.

Further, under a new Financial Accounting Standards Board requirement scheduled for publication in late 1990, employers will have to measure and report retiree health benefit liability. This change could have a major effect on the reported profitability of firms that do not prefund this benefit. Currently, there are limited tax incentives for companies to prefund the benefit. The combination of all of these changes thus may jeopardize the future of this benefit.

Medicaid Coverage of Medicare Beneficiaries and Retirees

Nearly 2.5 million, or 8 percent, of noninstitutionalized Medicare enrollees are dual-eligibles, receiving both Medicare and Medicaid coverage. Another 2 percent of enrollees receive other public insurance, primarily veterans and military retiree health benefits.⁶ Medicaid provides medigap-like protection to Medicare beneficiaries. Medicaid and other public assistance programs cover only a small proportion of those over 75 without supplemental insurance and uninsured retirees 55 to 64 not yet eligible for Medicare. In 1989, Medicaid paid about \$1.2 billion for dual-eligibles, a decline from \$1.3 billion in 1988. The decrease can be attributed partially to MCCA.

Approximately 4.2 million (or 19.1 percent) of all retired persons lack private health insurance (see Table 4-12). Medicaid and state or local programs cover only 22 percent of retirees without private supplemental coverage. The very old are less likely to have either private coverage or Medicaid. Nearly 36 percent of retirees without private coverage are 75 years or older, yet only 22.5 percent receive Medicaid.⁷

EMPLOYER-SPONSORED GROUP HEALTH INSURANCE

Employer-sponsored health insurance is the source of protection against the cost of illness for an estimated 147 million Americans. Employee health and dental insurance costs have steadily risen throughout the 1980s. According to the 1989 Employee Benefits Report of the U.S. Chamber of Commerce, employer health insurance costs rose from 5.9 percent to 7.1 percent of total payroll between 1979 and 1988.

The HIAA reports that insurers raised premiums by less than 6 percent per year between 1985 and 1987, while national health care expenditures were increasing by more than 10 percent annually. Consequently, insurers suffered underwriting losses of nearly \$4 billion in 1987 and \$5 billion in 1988. Attempting to regain profitability, insurers raised premiums 12 percent, on average, in 1988 and 18 percent in 1989.

Faced with rising health care costs, insurers and employers have responded in a variety of ways. A survey of more than 2,600 employer-sponsored health insurance plans, conducted by HIAA, examined two major cost containment options: increasing employee cost sharing, and controlling the types of plans offered and benefits covered.⁸

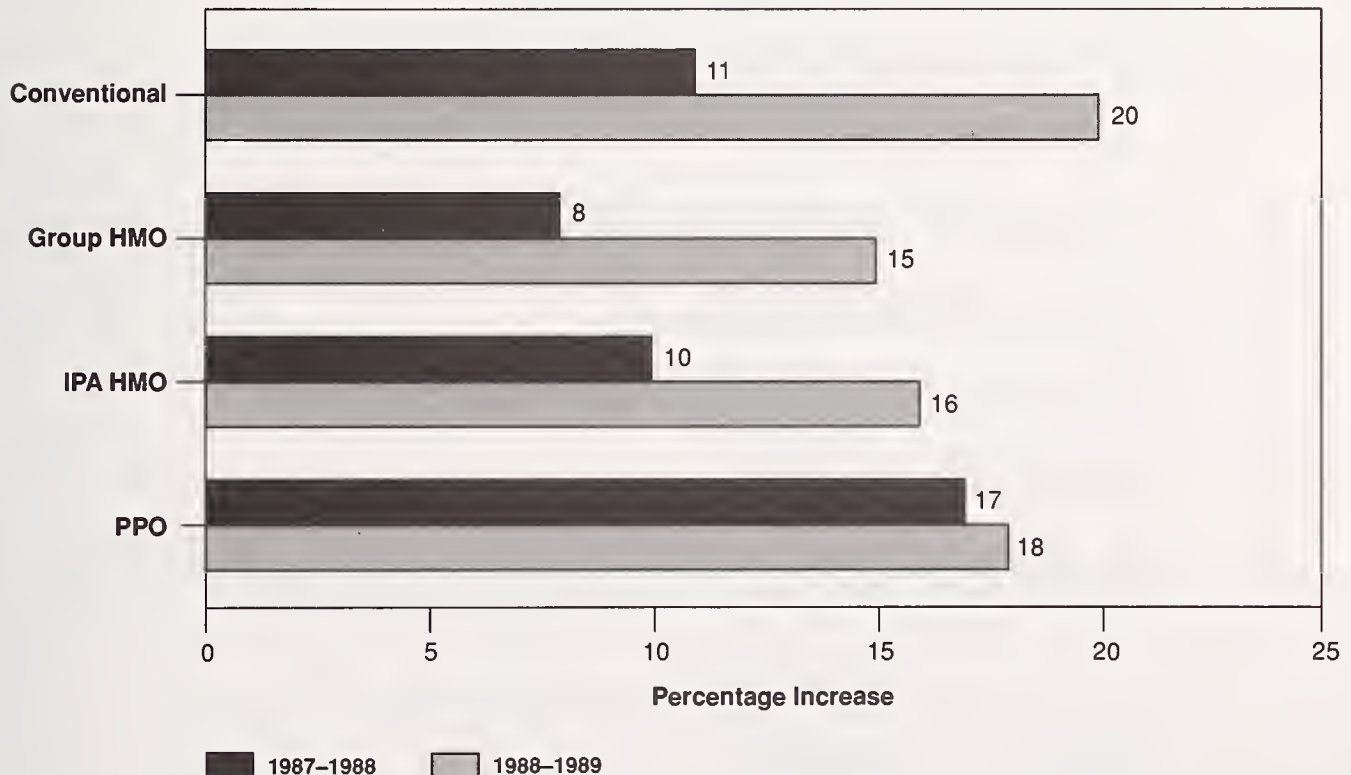
Overall, 64 percent of the employers surveyed provided health coverage. These employers represent three-fourths of all employees in the survey. Small employers continue to be much less likely to offer health benefits to their employees. Only 39 percent of employers with 20 or fewer employees offered health benefits, while over 90 percent of firms with more than 20 employees provided health insurance. The lack of health coverage among small employers seems to be a growing trend, as an increasing number of small firms appear to be dropping out of the health insurance market.

Employee Cost Sharing

In 1989, health insurance premiums continued to rise faster than both general inflation and medical care inflation. Overall, health insurance premiums have been growing at an increasing rate. However, these growth rates vary by type of plan (see Figure 4-1).⁹ Premiums for conventional plans increased 20 percent between 1988 and 1989, compared with 11 percent between 1987 and 1988. While premiums for health maintenance organization plans showed similar trends, premium increases for preferred provider organization plans rose only slightly.

Between 1987 and 1988, HIAA found that the increase in premium costs was primarily borne by the employer. However, between 1988 and 1989, employees assumed a somewhat greater share of their health premiums. Overall, employees' share of health insurance premiums increased about 4

Figure 4-1. Premium Increase by Type of Plan Offered by Employers



Note: Figures based on Family Coverage

SOURCE: Health Insurance Association of America Employer Survey, 1988 and 1989.

percent (see Figure 4-2). Generally, employees covered as individuals paid a greater share of their total premium in 1989, whereas employees with family coverage generally experienced little or no change in their share of the total premium. PPOs were the only plans for which the overall employee contribution was lower.

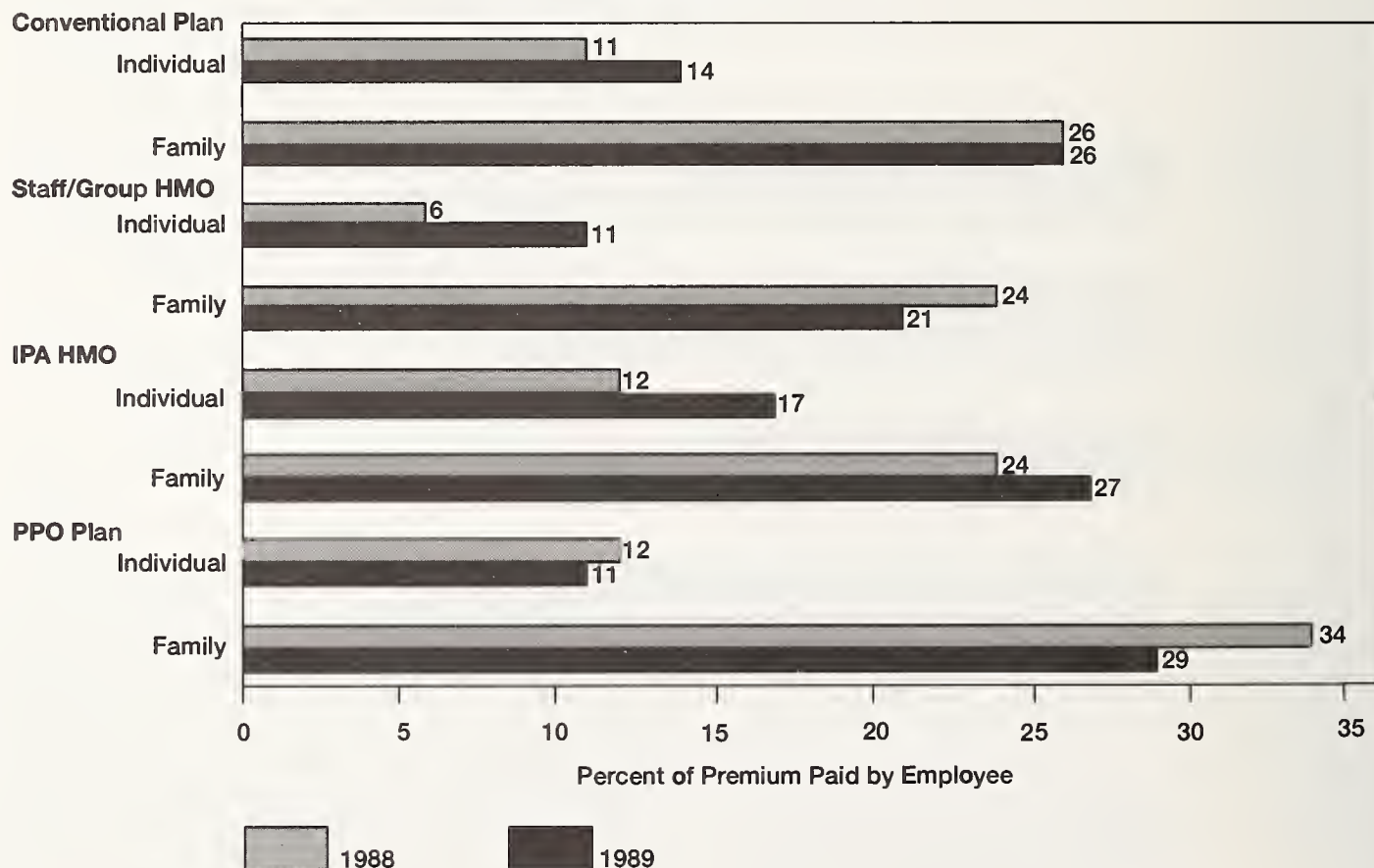
The amount of cost sharing required by employers varied considerably within plans, however. Thus, about one of every four employees in conventional plans, one of eight employees in PPO and independent practice association (IPA) plans, and one of 10 employees in group/staff HMO plans was not subject to premium increases. Premiums increased more for smaller firms (those with fewer than 100 employees) than for larger ones. The average increase was 15 percent for employers with at least 1,000 employees, compared with an average increase of 22 percent for firms with 20 or fewer employees.

In addition to a higher share of the premium cost, deductibles increased substantially for employees. Individuals in conventional plans saw deductibles increase 23 percent, on average, while families experienced an average 12 percent increase. In PPO plans, deductibles increased 38 percent for individuals using preferred providers and 20 percent for individuals using non-preferred providers. Employees enrolled in HMO plans faced little cost sharing. Most HMO subscribers in group/staff HMOs received care without any patient copayment. In IPAs, the typical copayment was \$5 per visit.

Types of Plans and Benefits

Another avenue available to employers for controlling premium costs is to reduce the benefits provided under the individual plans. The HIAA survey did not find employers using this option very often. Enrollees in HMOs are eligible for

Figure 4-2. Employee Share of Total Premium by Type of Plan Offered by Employer



SOURCE: Health Insurance Association of America Employer Survey, 1988–1989.

Table 4-13. Percentage of Employees Entitled to Selected Types of Health Benefits, by Type of Plan, 1989

Type of Benefit	Conventional Plan		PPO Plan	HMO Plan	
	Managed	Unmanaged		IPA	Staff/Group
Adult physical exam	33%	33%	42%	95%	99%
Well-child care	50	47	62	98	99
Preventive diagnostic procedures	69	63	71	94	100
Home health care	77	64	75	90	88
Mental health: outpatient	94	83	91	98	99
Mental health: inpatient	96	94	95	99	97
Substance abuse: drug	87	81	88	95	98
Substance abuse: alcohol	90	81	87	96	98
General dental care	40	32	39	17	11

SOURCE: Health Insurance Association of America Employer Survey, 1989.

more benefits than enrollees in PPOs. Enrollees in PPOs are eligible for more benefits than enrollees in conventional plans (see Table 4-13).

Between 1988 and 1989, conventional plans, by and large, maintained their level of preventive service benefits, but decreased home health care and increased substance abuse treatment benefits. PPO benefits remained relatively constant, with dental benefits actually increasing. IPA plans reduced some preventive service benefits while increasing outpatient mental health, substance abuse, and dental benefits. Group/staff HMOs generally maintained or increased the level of all benefits they offered.

In a further attempt to control premium costs, employers expanded their offerings of managed care plans at the expense of unmanaged fee-for-service plans. Enrollment in PPO and managed care conventional plans increased in 1989 over 1988, while unmanaged conventional plans lost enrollees (see Figure 4-3).

Future Trends in Employer-Sponsored Coverage

Employers and insurers have responded to the growth in health care costs by implementing strategies aimed at both the price and use of health care. Between 1988 and 1989, premiums increased for all types of plans, especially conventional coverage. PPO and managed fee-for-service plans increased market share, while unmanaged fee-for-service plans continued to decline and HMOs retained market share. Employee cost sharing also increased. The scope of benefits was not significantly

reduced. New managed care plans, such as HMOs with a self-referral option, are assuming a larger share of the employer-based health coverage market. These open-ended HMOs allow employees to obtain services from non-HMO providers by paying higher copayments.

In the coming decade, it appears that many second and third generation cost containment strategies that monitor utilization and cost patterns of providers and patients will be developed. Instead of creating cost incentive programs and expecting providers and patients to comply, the new strategies will focus on encouraging the use of and payment for appropriate and needed services.

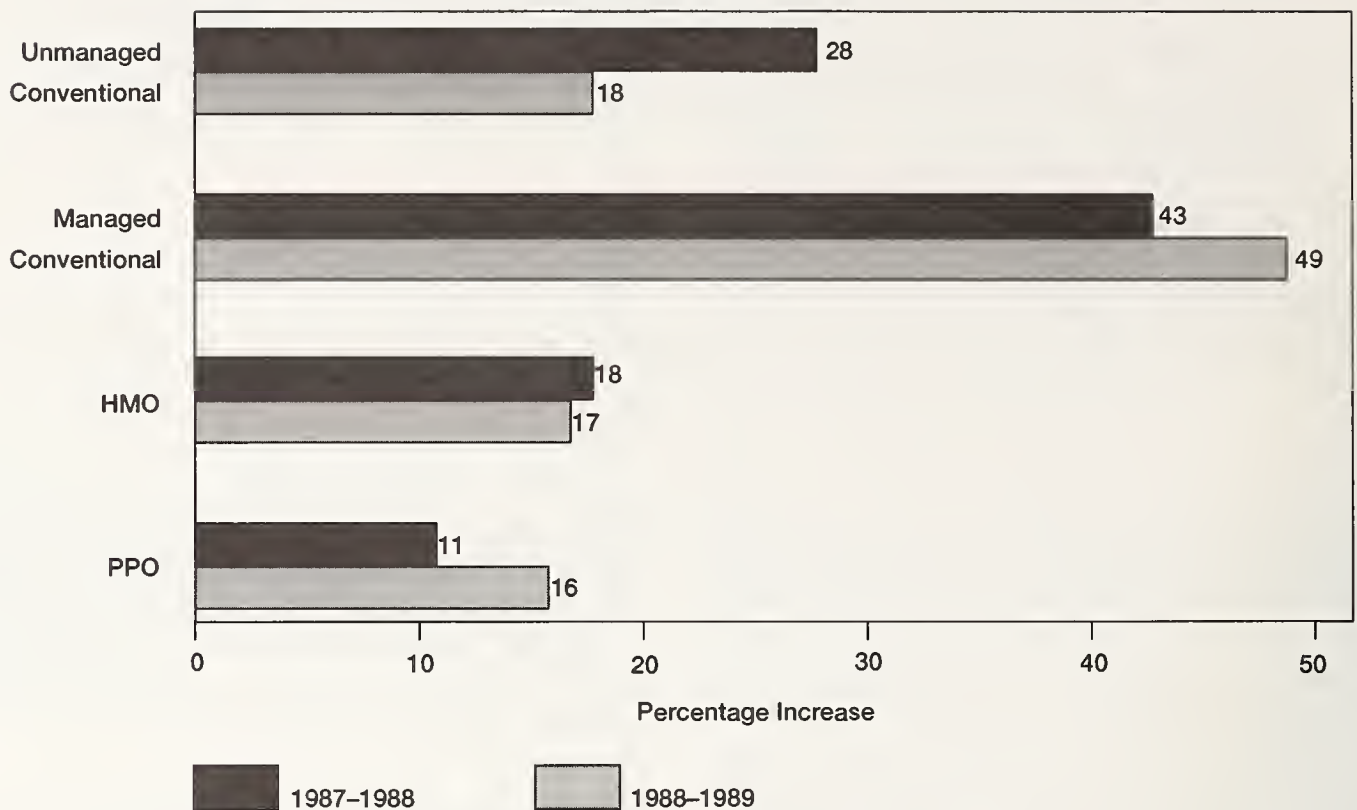
MANAGED CARE

Managed care ranges from the second opinion programs of fee-for-service plans to HMOs. These options have been used with varying degrees of success in attempts to curb the large increases in health care costs. This section focuses on two formal types of managed care, health maintenance organizations and preferred provider organizations.

Coverage

In 1989, 575 HMOs served 33.1 million enrollees. The number of plans has declined because of mergers, consolidations, and terminations (see Table 4-14). In addition, there has been a continued slowdown in HMO enrollment growth. The HMO market is older and more stable now. The oldest type of HMO, the group/staff model, has an average age of over 13 years and an average enrollment of over 100,000.¹⁰

Figure 4-3. Employee Enrollment by Type of Plan Offered by Employer



SOURCE: Health Insurance Association of America Employer Survey, 1988 and 1989.

There has been dramatic growth in the number of PPOs and the people eligible to use them since their development in the 1980s. Between 55 million and 60 million people were eligible to use the PPO option in 1989, an increase of approximately 20 percent over the previous year.¹¹ In 1989, there were 814 PPOs, an increase of more than 25 percent since 1988.

Table 4-14. Growth in Health Maintenance Organizations

Year	Number of Plans	Percent Change	Enrollment (In Thousands)	Percent Change
1981	260	--	10,497	--
1982	269	3.5%	11,606	10.6%
1983	290	7.8	13,643	17.6
1984	337	16.2	16,743	22.7
1985	480	42.4	21,052	25.7
1986	626	30.4	25,777	22.4
1987	650	3.8	29,286	13.6
1988 ^a	607	-6.6	31,941	9.1
1989 ^b	575	-5.3	33,093	3.6

^a Data as of January 1, 1989.

^b Data as of January 1, 1990.

SOURCE: Lynn Gruber et al., *The InterStudy Edge: Volume 2* (Excelsior, MN: InterStudy, 1990); and InterStudy, *Data on Alternative Financing and Delivery Systems* under contract to ProPAC, April 1989.

Medicare Program

In 1989, 166 HMOs served 1.4 million Medicare beneficiaries. While the number of plans providing services declined 17 percent from 1988 to 1989, the number of beneficiaries enrolled increased by 4.6 percent.¹² Medicare payments to HMOs can be made on a fee-for-service basis or on a risk basis as a prospective, fixed amount. In 1989, 58 percent of the HMOs serving Medicare beneficiaries were paid a fixed rate per beneficiary under the risk program. The number of plans participating in the risk program declined in 1989. Many of the plans that dropped their participation cited dissatisfaction with the current payment formula as the primary reason.¹³

Most HMOs offer expanded benefits to attract Medicare beneficiaries. In fact, for many beneficiaries, joining an HMO may eliminate the need for medigap insurance. Nevertheless, most plans still limit their benefits to acute and preventive services. HMOs, like most other health plans, do not offer long-term care coverage to their members.

LONG-TERM CARE

Most long-term care services are provided to the elderly because of their high risk for chronic illness. Approximately 60 percent of those receiving long-term care services are elderly. Elderly persons with functional or activity limitations may receive long-term care from an institution, such as a nursing home. Alternatively, they may receive noninstitutionally based long-term care, such as home care; homemaker services; occupational, physical, and speech therapy; adult day care; respite care; and nutritional and health education.

In 1988, about 6.9 million people received long-term care services financed through Medicaid, Medicare, SSI, and other public and private sources. National spending for long-term care in 1987 totaled an estimated \$56 billion.¹⁴ Of this amount, approximately 75 percent was spent on nursing home care, and 25 percent on home care and other services.¹⁵

Medicaid has been responsible for almost half of total national health care spending for nursing home care.¹⁶ Direct out-of-pocket costs accounted for 49 percent of national spending on nursing home care. Medicare contributed less than 2 percent and private long-term care insurance paid less than 1.0 percent of national spending for nursing home care.

Between 1988 and 2018, long-term care spending for nursing home services is expected to increase almost twice as fast as the number of people using these services (see Table 4-15). In addition, spending for home care is expected to increase 10 times faster than the number of people receiving this care.¹⁷

As of December 1988, more than 100 companies offered long-term care insurance plans that covered over 1.1 million people. In 1988, the typical individual plan provided skilled, intermediate, and

Table 4-15. Long-Term Care Spending and Utilization: Thirty-Year Projection

Payment Source/Utilization	1988 ^a	2003	2018	Percent Increase
Nursing Home Services				
Source (in billions) ^b				
Medicare	\$ 0.5	\$ 1.8	\$ 2.8	460%
Medicaid	11.6	25.0	41.1	254
Beneficiary out-of-pocket	17.3	35.3	57.2	231
Total	29.4	62.1	101.1	244
Utilization (in millions)				
Admissions	0.9	1.3	1.6	78%
Average daily census	1.2	2.1	2.7	125
Home Care Services				
Source (in billions) ^b				
Medicare	\$ 2.1	\$ 3.5	\$ 5.3	152%
Medicaid	1.3	2.4	3.1	138
Other payers	0.9	2.3	3.5	289
Beneficiary out-of-pocket	1.8	3.8	7.0	289
Total	6.1	12.0	18.9	210
Utilization (in millions)				
Users	3.4	3.9	4.1	21%

Note: Projections for aged population only.

^a Nursing home estimates in 1988 column are based on 1987 data.

^b 1989 dollars.

SOURCE: The Brookings Institution/ICF, Long-term Care Financing Model, unpublished estimates, 1989.

custodial nursing home care, as well as a home health care benefit. Payment for care was usually a fixed amount. Private long-term care insurance has been criticized for having restrictions, such as prior hospitalizations, that severely limited the beneficiary's ability to collect any benefits, and for not offering any allowance for inflation. The HIAA reported that many policies introduced in 1988 and after are less restrictive. The average premium for plans introduced in 1988 was over \$300 per year for a 50-year-old. It was almost \$800 per year for a 65-year-old and nearly \$2,800 per year for a 79-year-old.

Today, several groups in the Federal government and the private sector are studying ways to improve the financing and delivery of long-term care services. There is, however, no consensus on how to reduce the out-of-pocket expenditures of the elderly or enhance the delivery of these services.

CONCLUSIONS

Most Medicare beneficiaries have supplemental insurance coverage that protects against some out-of-pocket costs for health care services. Nevertheless, significant numbers of the elderly—

often those most likely to incur these costs—remain vulnerable. Further, even a beneficiary with adequate health insurance coverage can still incur catastrophic health care costs because certain services, such as long-term care and prescription drugs, are not covered under most policies.

In addition to these concerns, health care costs continue to rise for Federal and state governments, private insurers, and recipients of health care. Further complicating the picture is the lack of completely successful methods to control these costs. While Medicare's prospective payment system has helped to reduce the rate of growth in inpatient hospital expenses, it has not had a corresponding effect on the growth in total Medicare expenditures.

MCCA exemplifies the dilemma posed by these two vital public policy issues—potential limits to access to care and rising costs. The Act was designed to fill some of the troubling gaps in Medicare coverage. But the inability to find an acceptable means to finance the legislation led to its repeal. The Commission and others will continue to explore and develop solutions to both important issues.

Notes to Chapter 4

1. "Beyond Medicare: Which Insurance Do You Need?" *Consumer Reports* 54(6):375, June 1990.
2. Alan C. Monheit and Claudia L. Schur, "Health Insurance Coverage of Retired Persons," *National Medical Expenditure Survey Research Findings* 2, DHHS Pub. No. (PHS) 89-3444, National Center for Health Services Research and Health Care Technology Assessment (Rockville, MD: NCHSR, September 1989).
3. Thomas Rice, Katherine Desmond, and Jon Gabel, *Older Americans and Their Health Coverage, Research Bulletin R1389* (Washington, DC: Health Insurance Association of America, October 1989).
4. ProPAC estimates based on data from HCFA's Office of the Actuary, Office of Medicare Cost Estimates. These figures were computed assuming Medicare supplemental-type policies, where 68 percent of beneficiaries had medigap policies and 10 percent were dual-eligibles. Therefore, they may understate the actual amount if the policies were more generous than minimum standards.
5. Foster Higgins, *Health Care Benefit Survey* (Princeton, NJ: Foster Higgins, 1988).
6. U.S. Congress, Congressional Budget Office, "Sources of Supplemental Insurance of Medicare Enrollees," staff memorandum, Washington, DC, January 28, 1989.
7. Monheit and Schur, "Health Insurance Coverage of Retired Persons."
8. In the spring of 1989, HIAA conducted a telephone survey of employee benefit managers from a national sample of 2,621 randomly selected employers; 64 percent provided health benefits and 36 percent did not. The sample includes 879 firms with fewer than 20 employees; 196 firms with 20 to 99 employees; 614 firms with 100 to 999 employees; and 932 firms with more than 1,000 employees. Two segments of the U.S. population that obtain health insurance from their employers are missing from this sample: Federal employees and individuals who obtain insurance through a union or professional association. In total, the sample reflects an estimated 84 percent of the population that receives health insurance through employers.
9. Three basic types of plans are discussed here: (1) conventional plans, (2) health maintenance organizations, and (3) preferred provider organizations. A conventional insurance plan is defined as a traditional indemnity or fee-for-service plan, which usually reimburses on a reasonable and customary basis or on a billed as charged basis. Many plans have begun to institute some types of managed care provisions, such as preadmission certification. An HMO is a health care delivery system that provides comprehensive medical care for a predetermined periodic payment. Staff, group, and network models provide services through multispecialty physician group practices. In IPAs, services are provided by physicians who contract with the HMO. PPOs are groups of hospitals and physicians that contract with employers, insurers, third-party administrators, or other sponsoring groups to provide comprehensive medical care. Enrollees have the choice of getting services from this network or, at a higher fee, outside the network.
10. Lynn Gruber, Maureen Shadle, Kirk Pion, et al., *The InterStudy Edge 1990, Volume 1*, and *Volume 2* (forthcoming) (Excelsior, MN: InterStudy, 1990).
11. American Managed Care and Review Association, *Directory of Preferred Provider Organizations and the Industry Report on PPO Development, January 1990* (Washington, DC: American Managed Care and Review Association, 1990).

12. U.S. Department of Health and Human Services, Health Care Financing Administration, Office of Prepaid Health Care, Division of Contract Administration, "Monthly HMO Report," unpublished memorandum, Washington, DC, 1990.
13. Leslie Rose and Marsha Gold, Group Health Association of America, personal communication, March 1990; U.S. Department of Health and Human Services, Health Care Financing Administration, Office of Prepaid Health Care, personal communication, March 1990.
14. U.S. Congress, The Pepper Commission, "Defining the Issues in Long-Term Care: A Commission Staff Analysis," unpublished staff paper, Washington, DC, June 1989.
15. Nancy M. Gordon, assistant director for Human Resources and Community Development, Congressional Budget Office, U.S. Congress, preliminary calculations for 1985 national spending for long-term care, in testimony before the Health Task Force, Committee on the Budget, U.S. House of Representatives, Washington, DC, October 1, 1987.
16. The Pepper Commission, "Defining the Issues in Long-Term Care."
17. The Brookings/ICF long-term care financing model, unpublished estimates, 1989.

Appendix

BIOGRAPHICAL SKETCHES OF COMMISSIONERS

Stuart H. Altman, Chairman

Stuart H. Altman, dean of the Florence Heller Graduate School for Social Policy, Brandeis University, and Sol C. Chaikin Professor of National Health Policy, is an economist whose research interests are primarily in the area of Federal health policy. He has been at Brandeis since 1977. Between 1971 and 1976, Dean Altman was deputy assistant secretary for planning and evaluation/health at the Department of Health, Education and Welfare (now the Department of Health and Human Services). In that position, he was one of the primary contributors to the development and advancement of the National Health Insurance proposal. From 1973 to 1974, he also served as the deputy director for health of the President's Cost of Living Council, where he was responsible for developing the council's program on health care cost containment. Formerly, Dean Altman taught at Brown University and at the University of California (Berkeley). He is a member of the Institute of Medicine of the National Academy of Sciences and former member of its governing council; on the board of Beth Israel Hospital (Boston); and chairman of the board of the Health Policy Center at Brandeis. He is a past president of the National Association for Health Services Research and former board member of The Robert Wood Johnson Clinical Scholars Program. Dean Altman received both an M.A. and a Ph.D. in economics from the University of California (Los Angeles).

Richard A. Berman

Richard A. Berman is special consultant to McKinsey & Company, Inc., in New York, a position he has held since 1987. In addition, he serves several organizations, including the executive committee of the New York City Public Development Corporation, the New York State Council on Health Care Financing, and the National Advisory Council for the Center for Hospital Finance and Management at The Johns Hopkins University. Previously,

he was a management consultant and a candidate in the Democratic primary in the 20th Congressional District. Mr. Berman was the executive vice president of New York University Medical Center from 1983 to 1986. At that time he was also a professor in health care management at the School of Medicine. Mr. Berman worked for New York State from 1977 to 1983, first as director of the Office of Health Systems Management and later as the commissioner of the Division of Housing and Community Renewal. Before that, he was assistant dean of Cornell University Medical School, as well as associate director for ambulatory services at the New York Hospital, clinical assistant professor in the Departments of Medicine and Public Health at Cornell University Medical School, and senior program consultant and program director for The Robert Wood Johnson Foundation. Prior to these positions, Mr. Berman was special assistant for policy development, Office of the Assistant Secretary for Health, Department of Health, Education and Welfare. He also served in the Office of Health in the Economic Stabilization Program, the University of Utah Hospital, and the U.S. Public Health Service. Mr. Berman received B.A., M.B.A., and M.H.A. degrees from the University of Michigan.

James D. Bernstein

James D. Bernstein is director of the North Carolina Office of Rural Health and Resource Development and president, North Carolina Foundation for Alternative Health Programs, Inc. He has also been a research associate with the Health Services Research Center at the University of North Carolina at Chapel Hill since 1970. Mr. Bernstein has adjunct appointments with the University of North Carolina School of Medicine and with the Duke University School of Medicine. Between 1970 and 1973, he was a Fellow at the Career Development Program in Global Community Health, a part of the U.S. Department of Health, Education, and Welfare. Before that he worked with the Santa Fe Service Unit of the Indian Health Service. Mr. Bernstein has held a variety of professional positions, including vice chairman of

the North Carolina Health Insurance Trust Commission, chairman of the rural health steering committee of the National Academy for State Health Policy, and member of the national advisory committee for The Robert Wood Johnson Foundation Hospital Based Rural Health Care Program. He has also been a consultant on projects related to indigent care, practice pattern variations, and cost-effective medical care. Mr. Bernstein received a B.A. in political economy from The Johns Hopkins University and an M.H.A. from the University of Michigan.

Curtis C. Erickson

Curtis C. Erickson is president and chief executive officer of Great Plains Health Alliance, Inc., a post he has held since 1959. He was that organization's assistant director from 1955 to 1959. Having served the American Hospital Association (AHA) in many capacities, he became chairman of Regional Advisory Board 6 and a trustee in 1987. He has also chaired AHA's advisory panel to the Center for Small or Rural Hospitals and has been a member of the Council on Management, the Council on Federal Relations, and a representative to the House of Delegates. President of the Lutheran Hospital Association of America from 1974 to 1975, Mr. Erickson was also on the board of trustees from 1972 to 1982. He was president of the Kansas Hospital Association from 1965 to 1966, a member of the board of governors of the Healthcare Stabilization Fund for the Kansas Department of Insurance, and past district governor of Rotary International. From 1983 to 1986, Mr. Erickson served on The Robert Wood Johnson Foundation's National Advisory Committee for the Rural Hospital Program of Extended Care Services. Mr. Erickson is a member of the American College of Healthcare Executives. From 1951 to 1955, he served in the U.S. Air Force. He received a B.S. in business administration from Fort Hays Kansas State University in 1951.

William D. Fullerton

William D. Fullerton is an adjunct professor in the School of Medicine, University of North Carolina at Chapel Hill. From 1978 to 1984, he was

principal and president of Health Policy Alternatives, Inc., where he is now a part-time consultant. The first deputy administrator of the Health Care Financing Administration (1977-78), Mr. Fullerton was also a special consultant to the Secretary of the Department of Health, Education and Welfare. He served as chief of the professional health staff, Committee on Ways and Means, U.S. House of Representatives, from 1970 to 1976. Mr. Fullerton was the first executive secretary of the Health Insurance Benefits Advisory Council in 1965-66. Before that, he held various positions in the Social Security Administration. He is a member of the Institute of Medicine of the National Academy of Sciences. Mr. Fullerton received a B.A. from the University of Rochester.

William S. Hoffman

William S. Hoffman has been director of the Social Security Department of the International Union of the United Auto Workers since 1984. Previously, he was the assistant director and a consultant to the department. Mr. Hoffman is also director of the Michigan Health and Social Security Research Institute, Inc., where from 1973 to 1980 he was a senior research associate. An active participant in national and state health care issues, Mr. Hoffman has served on the Michigan Certificate of Need Commission, the Department of Health and Human Services' Council on Graduate Medical Education, the Department of Labor's Advisory Council on Employee Welfare and Pension Benefit Plans, the Governor's Task Force on Access to Health Care in Michigan, and the Institute of Medicine of the National Academy of Sciences. He served in various research and teaching capacities with the Social Science Research Center at Mercy College of Detroit, the Department of Sociology at Wayne State University, the Detroit Residential Manpower Center, the Boys Republic, and the Merrill Palmer Institute. Mr. Hoffman has written and spoken extensively on such issues as the use of prepaid mental health care services and organized labor's perspective on current health care issues and legislation. He received a B.A. in psychology from Otterbein College and M.A. and Ph.D. degrees in sociology from Wayne State University.

B. Kristine Johnson*

B. Kristine Johnson in 1990 was named vice president and general manager, tachyarrhythmia pacing systems of Medtronic, Inc. She is also a member of the company's senior management council. Ms. Johnson joined the company in 1982 as director of corporate affairs. Subsequently, she served as vice president, U.S. national accounts/customer marketing; vice president, corporate affairs and planning; and vice president and general manager, peripheral vascular division. Before joining Medtronic, Ms. Johnson was an executive of Cargill, Inc. She is a former chair of the health care financing committee and government affairs section of the Health Industry Manufacturers Association (HIMA). Ms. Johnson is vice chair of the University of Minnesota Hospital board and chairs its planning and development committee. She received a B.A. from Saint Olaf College and served on the college's board of regents from 1973 to 1986.

Sheldon S. King*

Sheldon S. King is president of Cedars-Sinai Medical Center in Los Angeles, California. He was president of Stanford University Hospital and a clinical associate professor in the Department of Community, Family, and Preventive Medicine at Stanford's School of Medicine from 1986 to 1989. From 1981 to 1985, Mr. King served simultaneously as the hospital's executive vice president and director as well as the university's associate vice president for medical affairs. He was also director of hospitals and clinics, University Hospital, University of California Medical Center, from 1972 to 1981. He was executive director of the Albert Einstein College of Medicine-Bronx Municipal Hospital Center from 1968 to 1972, and held various positions at Mount Sinai Hospital from 1957 to 1968. Mr. King was chairman of the administrative board of the Council of Teaching Hospitals of the Association of American Medical Colleges. Besides serving in the House of Delegates of the American Hospital Association, he is chairman of the advisory board of the American Board of Internal Medicine. He is a member of the Institute of Medicine of the National Academy of Sciences. Mr. King is a Fellow of the American College of Health Care Executives, the American Public Health Association, and the Royal Society

of Health. Mr. King received an A.B. from New York University and an M.S. from Yale University.

Larry L. Mathis

Larry L. Mathis is president and chief executive officer of The Methodist Hospital System in Houston, Texas. This system includes 12 member corporations and The Methodist Hospital. He has held this position since 1983. Before that, Mr. Mathis held a number of positions at The Methodist Hospital. Mr. Mathis is a member of the board of trustees of the American Hospital Association and has been elected to serve on its executive committee. He was chairman of The Greater Houston Hospital Council, chairman of the Texas Hospital Association, and regent for Texas in the American College of Healthcare Executives. In addition, Mr. Mathis served as a member of the administrative board of the Association of American Medical Colleges' Council of Teaching Hospitals, and as chairman of the National Advisory Council on Health Care Technology Assessment from 1985 to 1988. He was a consultant to the Ministry of Education and Culture in Brazil. Mr. Mathis served in the U.S. Army from 1965 to 1970. He received a B.A. in social sciences from Pittsburgh State University in Kansas and an M.H.A. from Washington University.

Barbara J. McNeil

Barbara J. McNeil is professor and head of the Department of Health Care Policy at Harvard Medical School and professor of radiology at Brigham and Women's Hospital. She is also director of the Center for Cost-Effective Care, Brigham and Women's Hospital. Dr. McNeil is a member of the Harvard-MIT Division of Health Sciences and Technology. Her professional and advisory activities are extensive. Dr. McNeil is a member of the joint committee of the American College of Radiology, the Association of University Radiologists, and the Society of Chairmen of Academic Radiology. She is also a member of the Fleischner Society, the Institute of Medicine of the National Academy of Sciences, and the National Council on Radiation Protection and Measurements. She serves on the American College of Radiology's committees on nuclear radiology and on quality assurance and efficacy. Formerly, Dr. McNeil was on the

board of the Association for Health Services Research, the policy council of the Association for Public Policy Analysis and Management, the board of trustees of the Society for Medical Decision Making, and a member of the National Council on Health Care Technology. She has written five books and more than 150 professional articles and reports. Dr. McNeil has an A.B. in chemistry from Emmanuel College, an M.D. from Harvard Medical School, and a Ph.D. in biological chemistry from Harvard University.

Kathryn M. Mershon

Kathryn M. Mershon is senior vice president at Humana, Inc., a position she has held since 1988. She previously served as Humana's vice president, nursing. She holds an adjunct assistant professorship of nursing at Spalding University. From 1971 to 1980, Ms. Mershon was associate executive director, nursing at St. Joseph Infirmary (now Humana Hospital Audubon) in Louisville, Kentucky. Before that, she was a clinical nursing specialist at St. Joseph Infirmary, clinical instructor at St. Francis Xavier Hospital School of Nursing, and a staff nurse. She has a distinguished list of professional and community activities, including board of governors of the Federation of American Health Systems, board member of the National League for Nursing, and editorial review board of *Nursing & Health Care*. She is a former trustee of Spalding University and member of the advisory board of the University of Louisville's School of Nursing. Ms. Mershon also served on the Louisville Board of Health and on the board of governors of Louisville General Hospital. She has made numerous public presentations on a variety of nursing-related issues. Ms. Mershon received a B.S. in nursing from Spalding University and an M.S. in nursing from St. Louis University.

Eric Muñoz*

Eric Muñoz is the medical director of the University of Medicine and Dentistry at the University Hospital, New Jersey Medical School. He is also a member of the National Managed Care Council. From 1984 to 1988, Dr. Muñoz was head of the research division of the department of surgery at the Long Island Jewish-Hillside Medical Center,

and assistant professor of surgery at the State University of New York at Stony Brook. He has been an instructor at the Yale University School of Medicine and New York Medical College. Dr. Muñoz is nationally recognized for his research on the DRG payment mechanism, which has focused on the higher costs of emergency hospital admissions. He is also a specialist on problems of health care delivery to the poor. Dr. Muñoz was president of the American Association of Puerto Rican Scientists and served on the board of that organization. His other numerous professional affiliations include Fellow of the American College of Surgeons, the Association for Academic Surgery, and the International Health Economics and Management Institute. He is certified by the American Board of Surgery. Dr. Muñoz has published more than 30 articles on health care costs. He received a B.A. in psychology from the University of Virginia, an M.D. from the Albert Einstein College of Medicine, and an M.B.A. in finance and economics from Columbia University. Dr. Muñoz trained in general and peripheral vascular surgery at Yale University.

Donald R. Oder

Donald R. Oder is senior vice president and chief operating officer of Rush-Presbyterian-St. Luke's Medical Center in Chicago, where he formerly was senior vice president. Before that, he was audit manager with Arthur Andersen & Co. in Chicago. Mr. Oder has held various academic appointments, and is currently professor in the Department of Health Systems Management at the Rush University College of Health Sciences. He is a member of and has held leadership positions in several professional associations, including the American College of Healthcare Executives, the American Hospital Association, the Illinois Hospital Association, Voluntary Hospitals of America, the American Institute of Certified Public Accountants, and the Illinois C.P.A. Society. He has served on the board of directors of the Better Business Bureau of Metropolitan Chicago, Inc., and on the occupational health committee of the Chicago Association of Commerce and Industry. Mr. Oder received a B.S. from Wichita State University, a C.P.A. certificate from the University of Illinois, and an M.B.A. from the University of Chicago.

Elliott C. Roberts, Sr.

Elliott C. Roberts, Sr., is assistant secretary and chief executive officer of Charity Hospital at New Orleans, a position he has held since 1984. In this capacity, he implemented a reorganization of the Louisiana State Department of Health and Human Resources. Mr. Roberts holds an assistant professorship in the Department of Public Health and Preventive Medicine at Louisiana State University Medical School. He is also a preceptor in the Department of Health Systems Management at Tulane University School of Public Health and Tropical Medicine. From 1980 to 1984, Mr. Roberts was chief executive officer of Cook County Hospital in Chicago. Before that, he was vice president and associate project director for Hyatt Medical Management Services, as well as commissioner of hospitals and executive director of Detroit General Hospital. Mr. Roberts served as executive director at both Harlem Hospital Center (1969–72) and Mercy Douglass Hospital in Philadelphia (1965–69). An active member of the American Hospital Association, Mr. Roberts served on its board of trustees for five years as well as on the nominating committee, House of Delegates, and in other capacities. He has held similar positions of responsibility at the National Association of Public Hospitals and the Association of American Medical Colleges/Council on Teaching Hospitals. In addition to many other appointments, Mr. Roberts served on the Secretary's Commission on Nursing, Department of Health and Human Services. He received an M.A. in business administration-hospital administration from the George Washington University.

J. Michael Sadaj

J. Michael Sadaj has been medical director of respiratory care services and an active staff member at St. James Community Hospital in Butte, Montana, since 1979. He is presently secretary-treasurer of the medical staff there as well. In addition, Dr. Sadaj practices with the Rocky Mountain Service Corporation, specializing in internal medicine and pulmonary diseases. Dr. Sadaj formerly was medical director of respiratory therapy at Silver Bow General Hospital in Butte. He served on the executive committee and the infection control committee of both hospitals. Dr. Sadaj also chaired the medical section at St. James Community

Hospital (1980–83) and at Silver Bow General Hospital (1980–81). From 1974 to 1979, Dr. Sadaj was a resident in internal medicine and a Fellow in pulmonary diseases at the University of Nebraska Medical Center in Omaha. He has been a member of and held leadership positions in several organizations, including the Nebraska Medical Association, American Medical Association, Montana Medical Association, and the Montana Professional Assistance Program. In 1984, he was elected to a local government study commission. Dr. Sadaj received his B.S. and M.D. degrees from the University of Nebraska Medical Center.

Leonard D. Schaeffer

Leonard D. Schaeffer is chairman of the board and chief executive officer of Blue Cross of California. He came to Blue Cross from his position as president of Group Health, Inc. Mr. Schaeffer was formerly executive vice president and chief operating officer of the Student Loan Marketing Association. He served as administrator of the Health Care Financing Administration, Department of Health and Human Services, and as assistant secretary for management and budget in the Department of Health, Education and Welfare. Before that, Mr. Schaeffer was vice president of Citibank, N.A. He has held various positions with the state of Illinois, including director of the Bureau of Budget, head of the State Planning Office, chairman of the Illinois Capital Development Board, and deputy director for management, Illinois Department of Mental Health and Developmental Disabilities. He was previously vice president of a private investment banking firm, and a consultant for Arthur Anderson & Company. A Kellogg Fellow, Mr. Schaeffer is a member of the board of the University of Southern California, School of Public Administration; the Cultural Foundation; Town Hall of California; United Way; and *Managed Healthcare*. Mr. Schaeffer is also an International Fellow at the King's Fund College, London, England. He was graduated from Princeton University.

Jack K. Shelton

Jack K. Shelton is manager of the Employee Insurance Department of the Ford Motor Company, which he joined in 1956. He is responsible for the financial control and analysis of nearly all employee

benefit plans. In this capacity, he participates in union negotiations, relations with insurance carriers, and financial control of company-administered plans. He also reviews changes in wage and benefit programs for foreign subsidiaries. Mr. Shelton is actively involved in a number of local and national health care organizations, serving as a director of the National Fund for Medical Education, a director of Blue Cross and Blue Shield of Michigan, and a member of the Statewide Health Coordinating Council of Michigan. In 1985, he was a member of an Office of Technology Assessment Advisory Panel on Alternative Physician Payments for Medicare and chairman of the Employer Prospective Payment Advisory Commission for the Washington Business Group on Health. He is past chairman of the National Industry Council on HMO Development, the Michigan Health Economics Coalition, the Michigan Hospital Capacity Reduction Corporation, and the Health Alliance Plan (Michigan's largest HMO). Mr. Shelton received B.S. and M.S. degrees in industrial psychology from Oklahoma State University.

J. B. Silvers

J. B. Silvers is co-director of the Health Systems Management Center of Case Western Reserve University. He is also the William M. and Elizabeth C. Treuhaft Professor of Management and professor of banking and finance at the university's Weatherhead School of Management, and professor of epidemiology and biostatistics at the School of Medicine. Before joining Case Western Reserve, Dr. Silvers was a faculty member at the business schools of Indiana, Harvard, and Stanford. At Harvard, he directed the Program for Financial Management and Strategy in Health for five years and served on the faculty of the Program for Health Systems Management for 10 years. Dr. Silvers served the Department of Health and Human Services as a member of the Secretary's Commission on Nursing and as a member of the Health Care Technology Study Section of the National Center for Health Services Research. During 1983-84, he chaired the Governor's Commission on Ohio Health Care Costs. He has written extensively in the fields of corporate financial management, and health care and hospital finance. He also serves as a consultant or adviser to numerous private organizations. Dr. Silvers received a Ph.D. in finance and economics

from Stanford University and M.S. and B.S. degrees from Purdue University in industrial administration and engineering, respectively.

Bruce C. Vladeck

Bruce C. Vladeck is president of the United Hospital Fund of New York. Immediately before joining that organization, Dr. Vladeck was assistant vice president of The Robert Wood Johnson Foundation. From 1979 to 1982, he was assistant commissioner for health planning and resources development of the New Jersey State Department of Health. In that position, he was director of the State Health Planning and Development Agency, where he oversaw the implementation of New Jersey's all payer, DRG-based hospital prospective payment system. Dr. Vladeck taught for four and one-half years at Columbia University, and has served on the adjunct faculty of Rutgers, Princeton, the College of Medicine and Dentistry of New Jersey, and New York University. He is the author of *Unloving Care: The Nursing Home Tragedy*, and has written numerous articles and book chapters on health policy, health care finance, and health politics. He is a member of the New York State Council on Graduate Medical Education, the executive committee of the New York Blood Center, the advisory committee to the Wagner School of Public Service of New York University, the visiting committee of the School of Management and Urban Policy of the New York School for Social Research, and the Institute of Medicine of the National Academy of Science. Dr. Vladeck is the president of the National Committee for Labor Israel-Histadrut. He received his bachelor's degree in government from Harvard College and M.A. and Ph.D. degrees in political science from the University of Michigan.

Sankey V. Williams

Sankey V. Williams is director of The Robert Wood Johnson Foundation Clinical Scholars Program at the University of Pennsylvania. He also serves as professor of medicine at the Hospital of the University of Pennsylvania and professor of health care systems at the university's Wharton School. In addition, he is associate director for medical affairs in the Wharton School's Leonard Davis Institute of Health Economics. He is an

associate in the Clinical Epidemiology Unit of the university and previously served as associate director for clinical research at the University of Pennsylvania's Center for the Study of Aging. He was a Henry J. Kaiser Family Foundation Faculty Scholar in general internal medicine from 1981 to 1986. Dr. Williams currently serves as an associate editor of the *Journal of General Internal Medicine*. Certified by the American Board of Internal Medicine, Dr. Williams has published and lectured widely in

many fields, including medical decision making, physician behavior, and hospital case-mix management. He received a B.A. from Princeton University and an M.D. from Harvard Medical School. Dr. Williams completed his internship and residency in medicine at the Hospital of the University of Pennsylvania and was a Robert Wood Johnson Foundation Clinical Scholar at the university.

*Term expired 1990

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